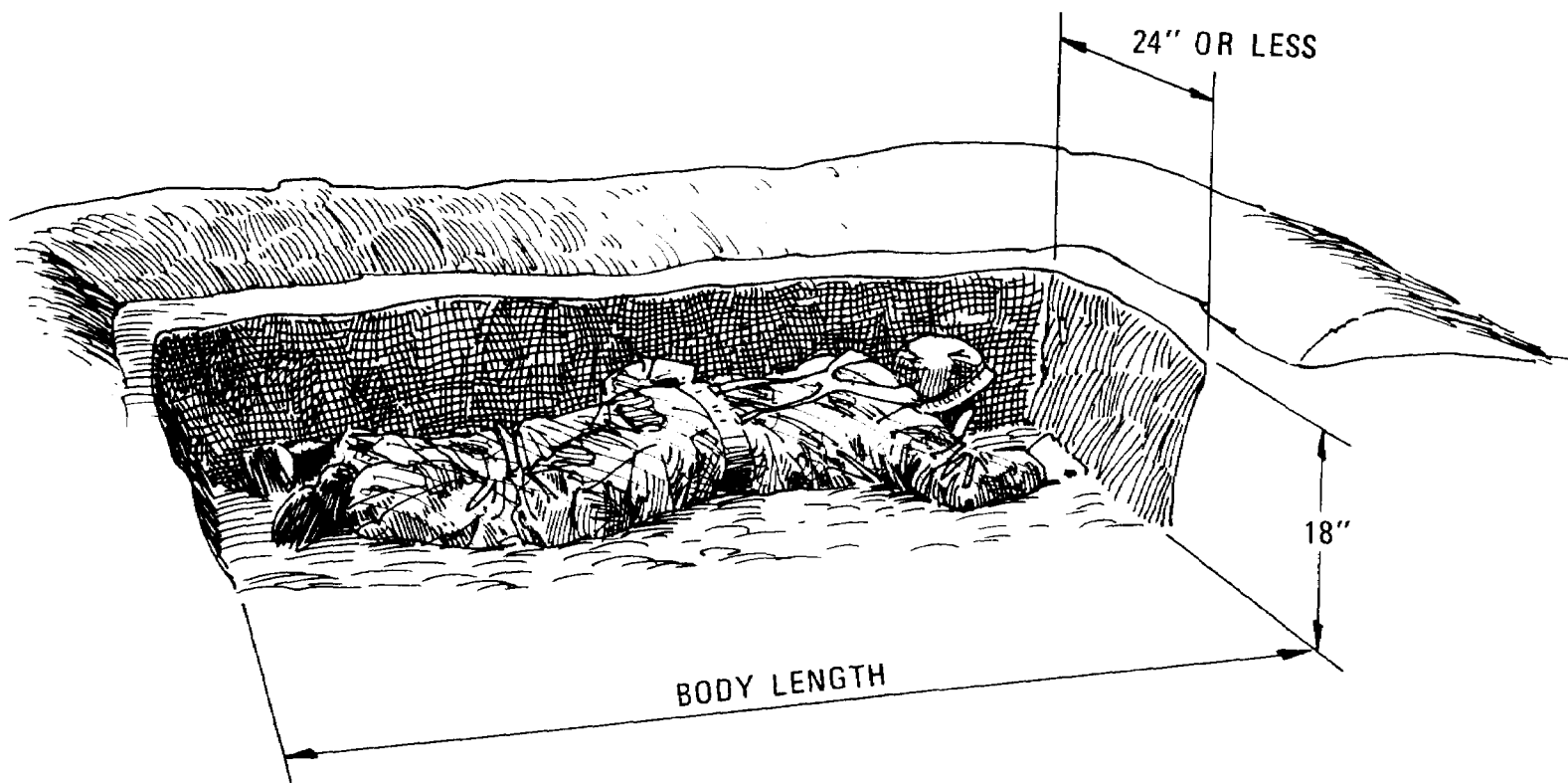
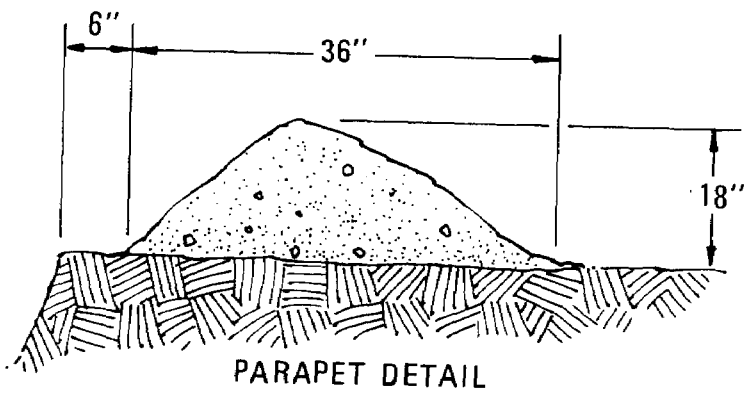


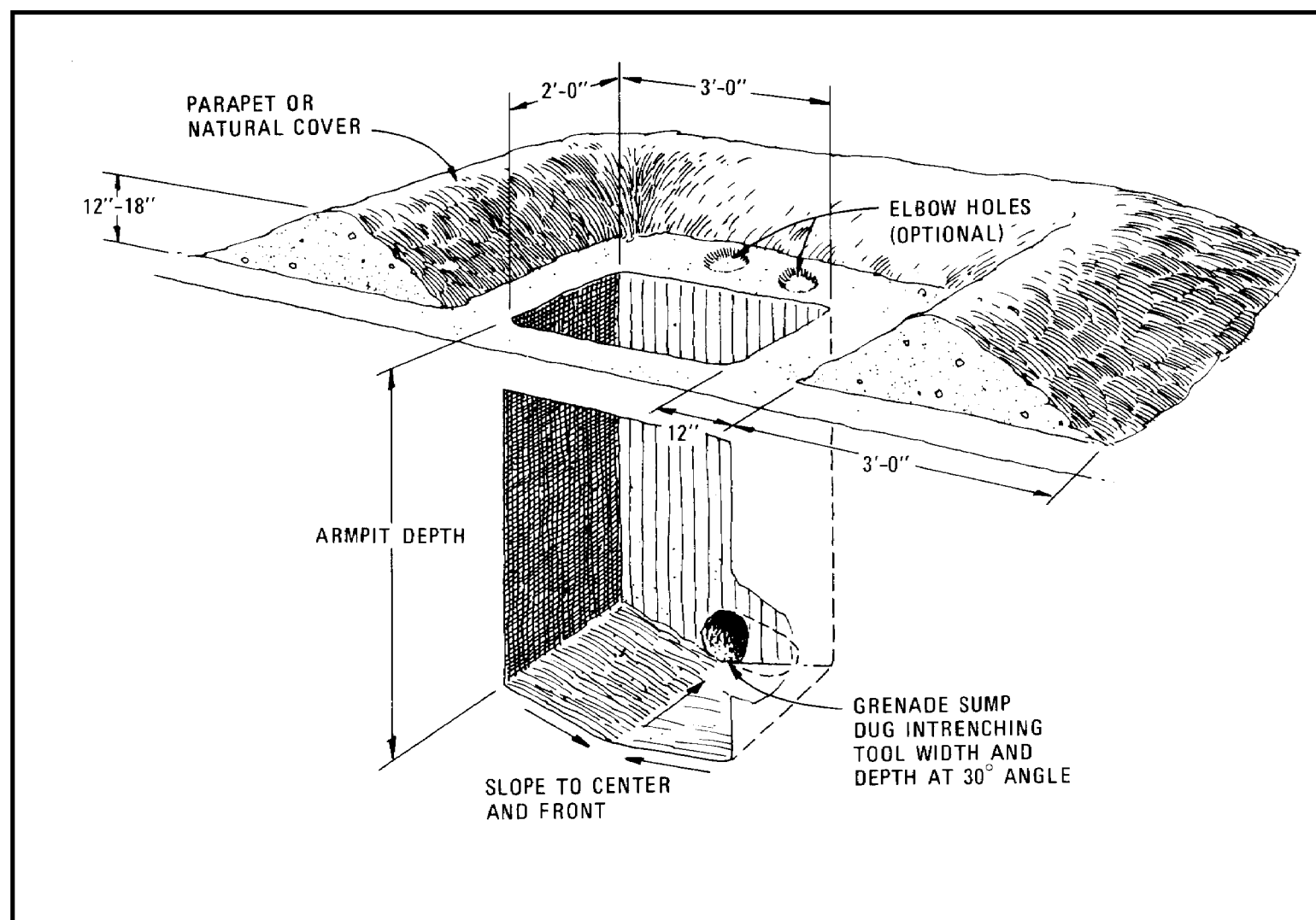
APPENDIX C

POSITION DESIGN DETAILS

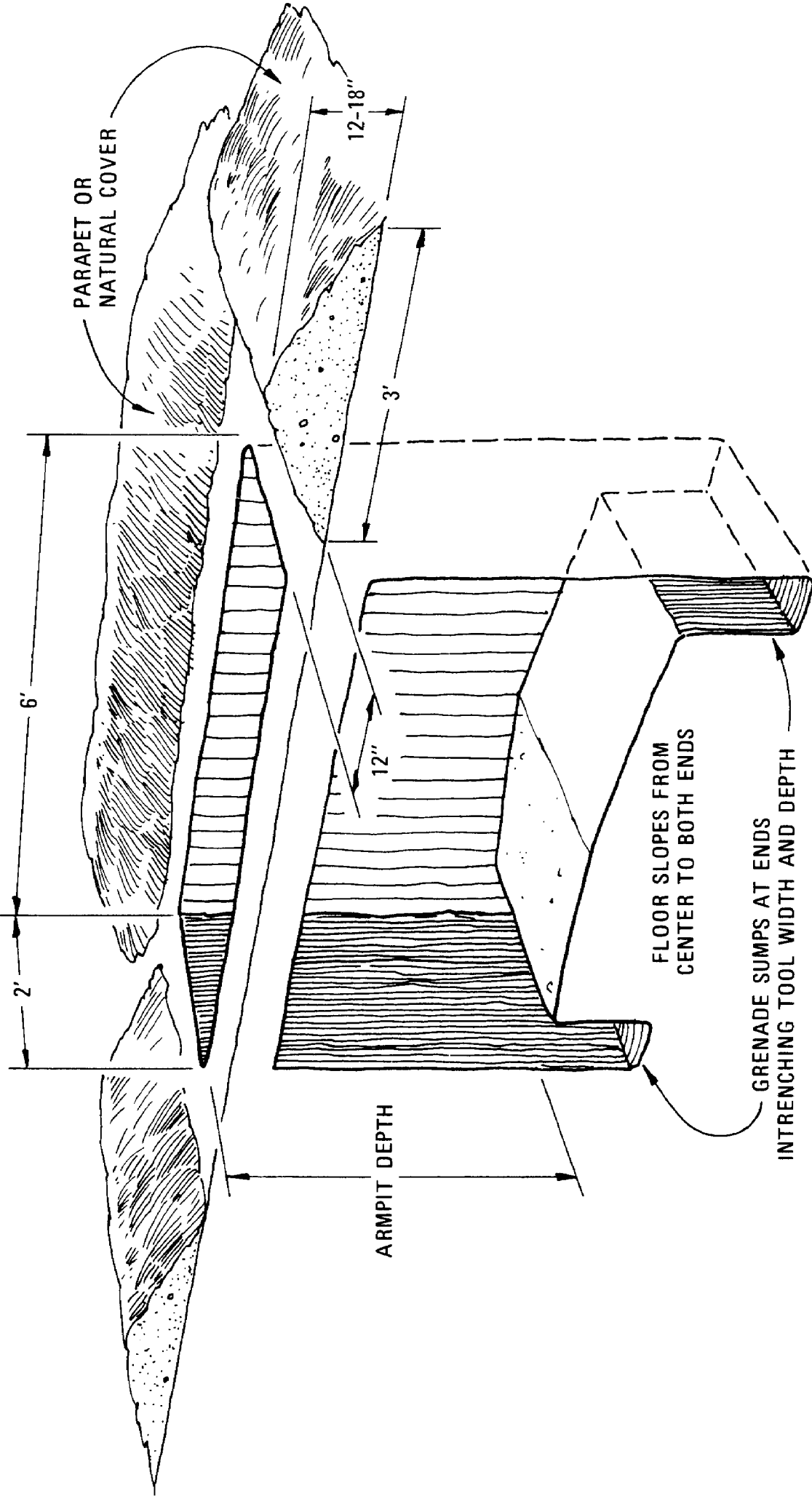
PRONE POSITION (HASTY)	C-2
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ONE- OR TWO-SOLDIER POSITION WITH OVERHEAD COVER (DELIBERATE)	C-5
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MORTAR POSITION (81MM AND 4.2-IN MORTARS)	C-8
WOOD-FRAME FIGHTING POSITION	C-9
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CORRUGATED METAL FIGHTING BUNKER	C-14
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PARAPET POSITION FOR ADA	C-28
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HARDENED FRAME/FABRIC SHELTER.....	C-41
RECTANGULAR FABRIC/FRAME SHELTER.....	C-44
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PORTABLE PRECAST CONCRETE WALL	C-59
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STANDARD FIGHTING TRENCH	C-62
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PRONE POSITION (HASTY)



ONE-SOLDIER POSITION (DELIBERATE)

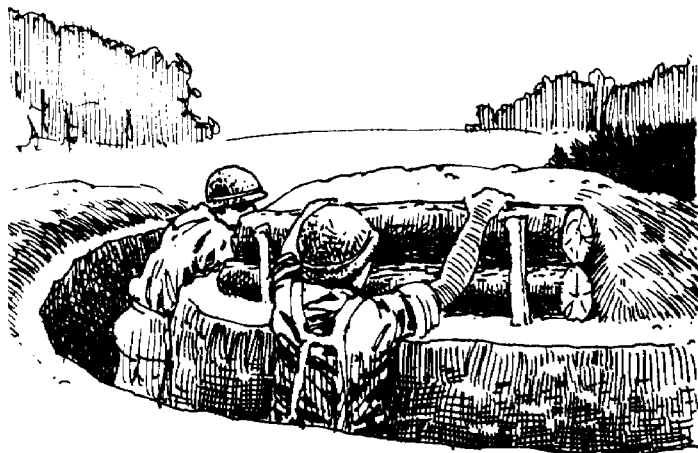
TWO-SOLDIER POSITION (DELIBERATE)



ONE- OR TWO-SOLDIER POSITION WITH OVERHEAD COVER (DELIBERATE)

FRONT SUPPORT

The front supports are high enough so men can shoot from beneath the overhead cover when it is completed.

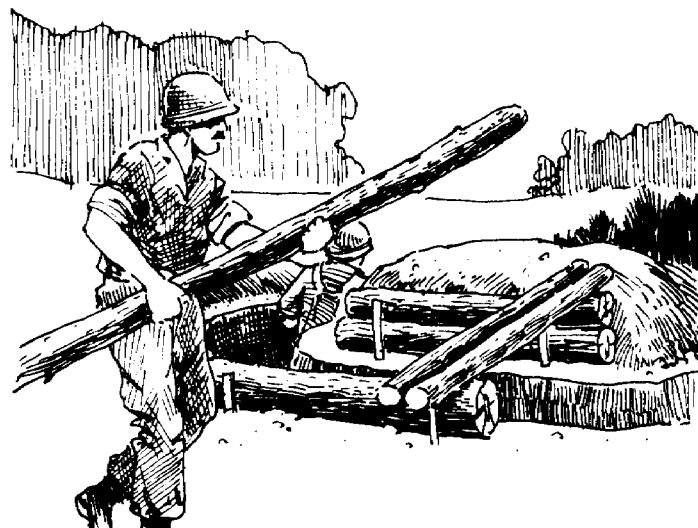


REAR SUPPORT

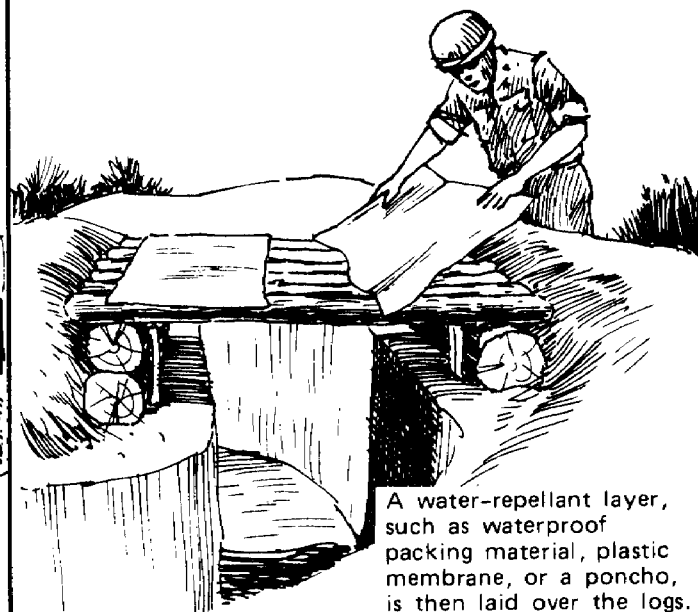


CONSTRUCTING ROOF

The roof is made of logs 4"-6" in diameter placed side by side across the supports.



WATERPROOFING



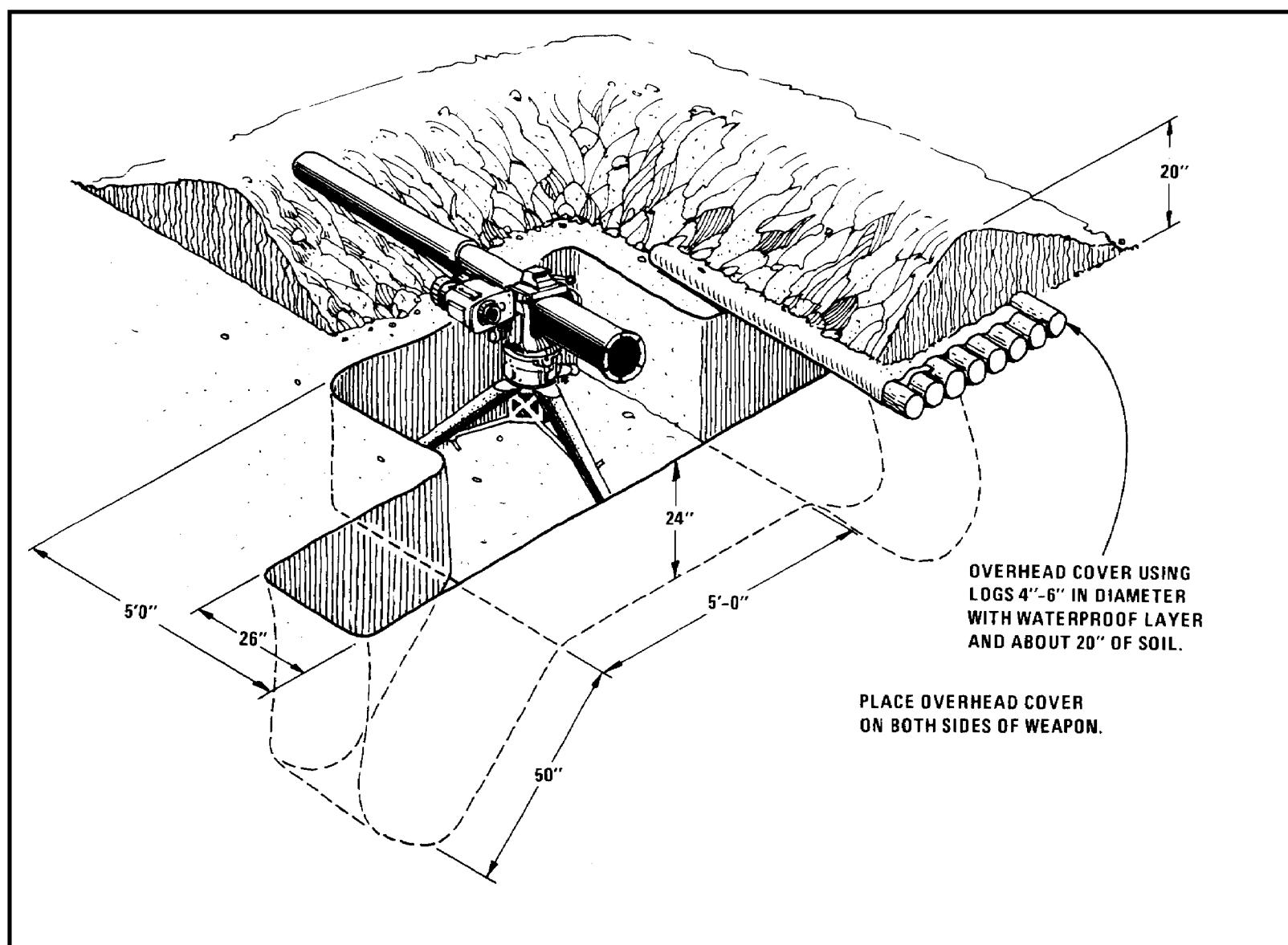
A water-repellant layer, such as waterproof packing material, plastic membrane, or a poncho, is then laid over the logs.

CAMOUFLAGE OVERHEAD COVER

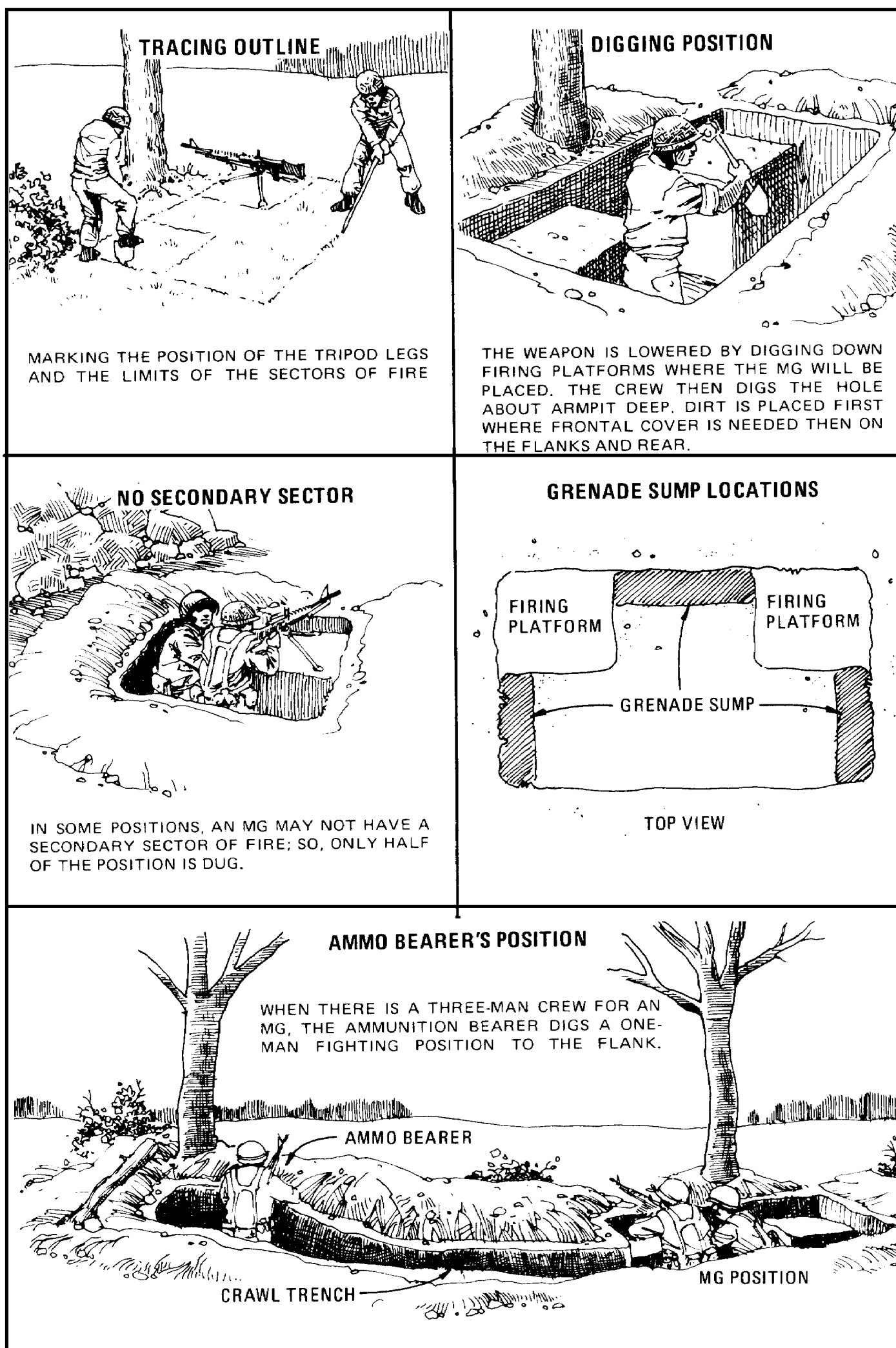


18"-20" of dirt is added and molded to blend with the slope of the terrain.

DISMOUNTED TOW POSITION

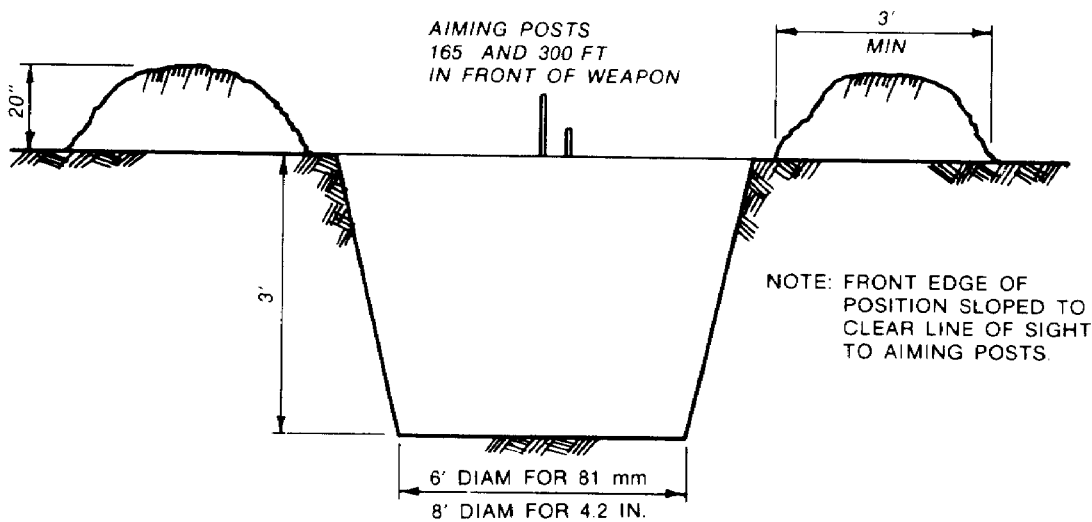


MACHINE GUN POSITION



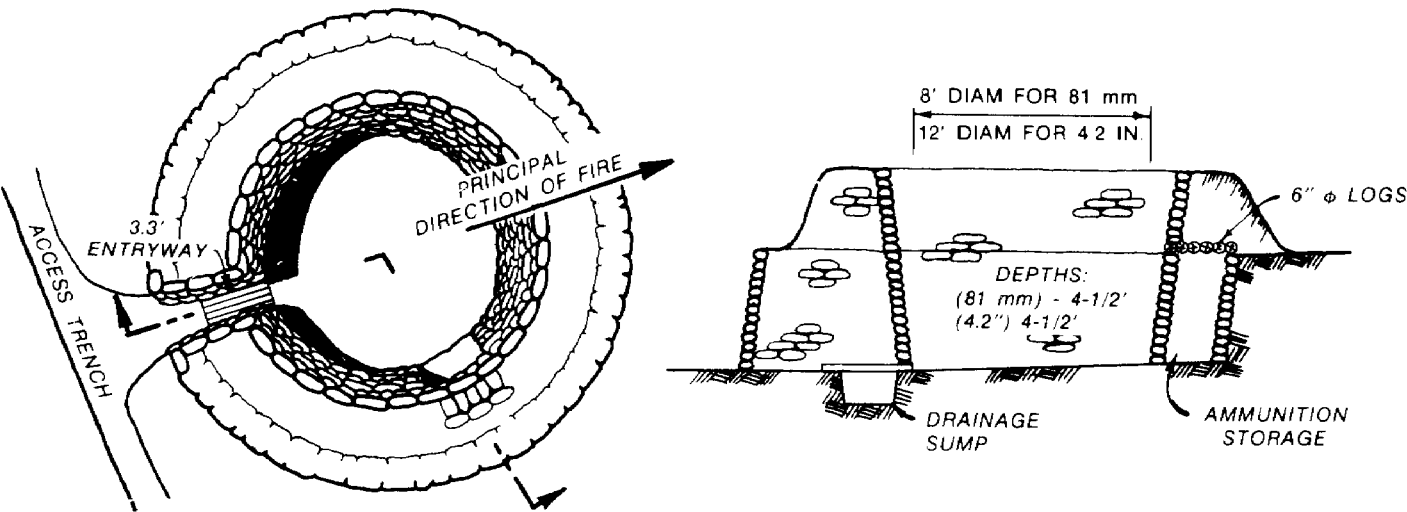
MORTAR POSITION (81MM AND 4.2-IN MORTARS)

HASTY POSITION



TYPICAL SECTION

IMPROVED POSITION

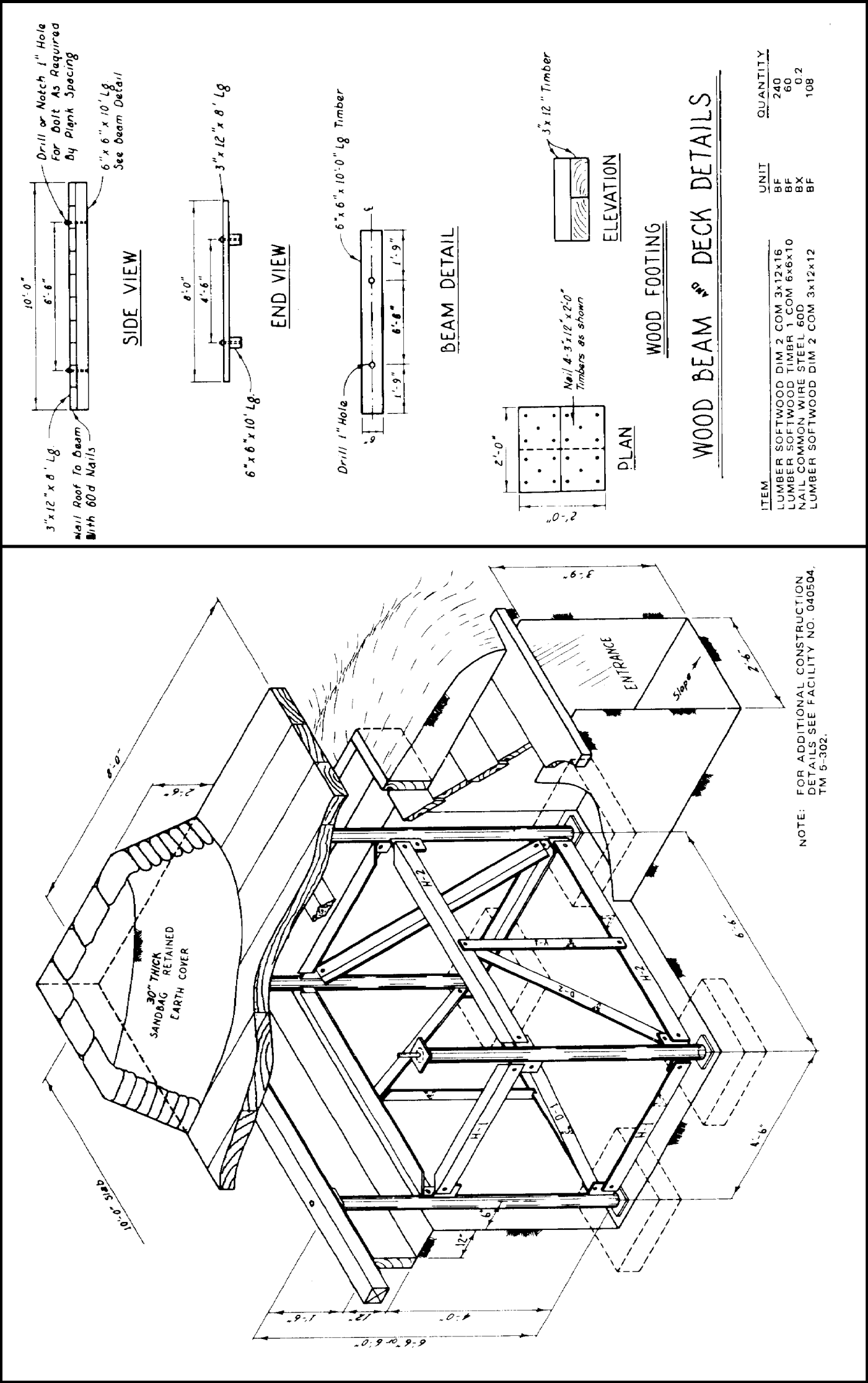


PLAN

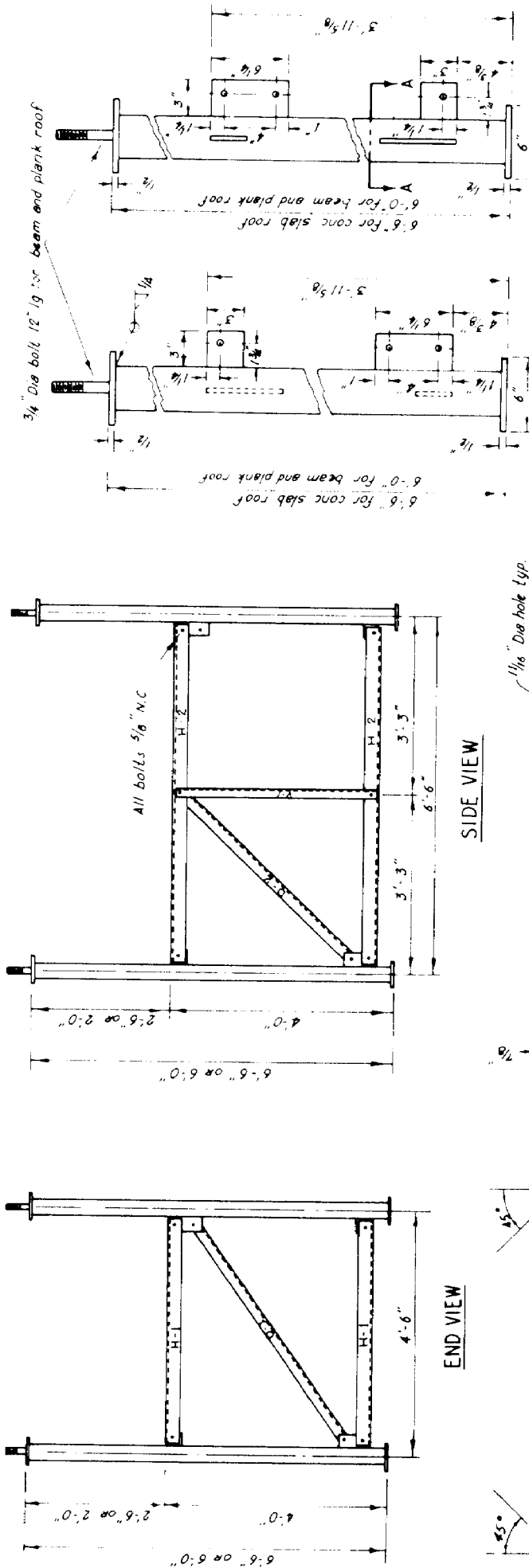
CROSS SECTION

NOTE: TOTAL DEPTH
INCLUDES THE PARAPET.
SLOPE FLOOR TOWARD
DRAINAGE SLUMP

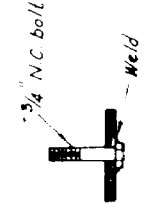
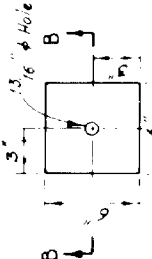
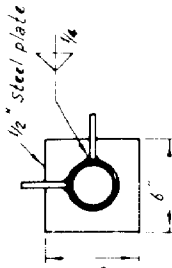
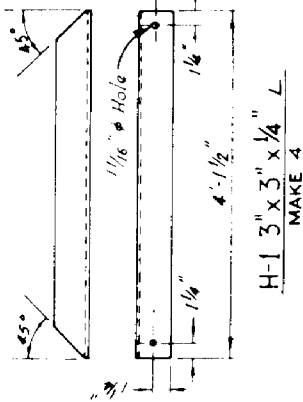
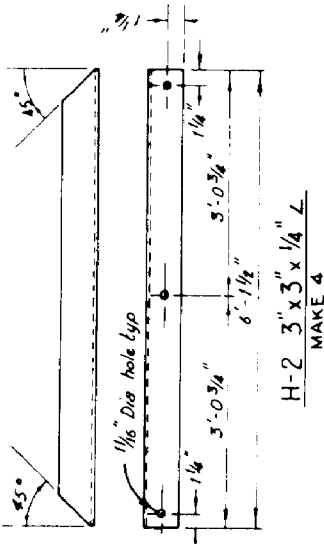
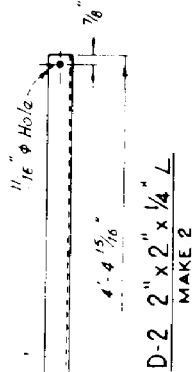
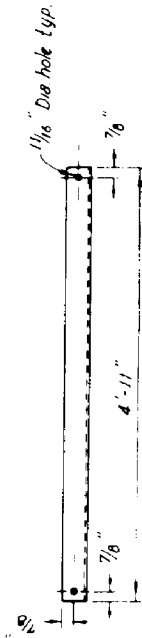
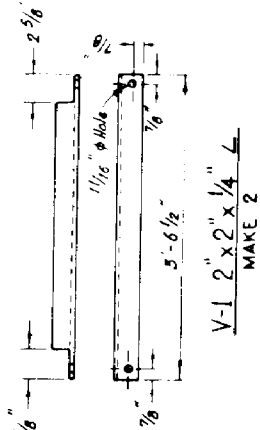
WOOD-FRAME FIGHTING POSITION (sheet 1 of 3)



WOOD-FRAME FIGHTING POSITION (sheet 2 of 3)



PIPE COLUMN
3" DIA. STD. STEEL PIPE
MAKE 4



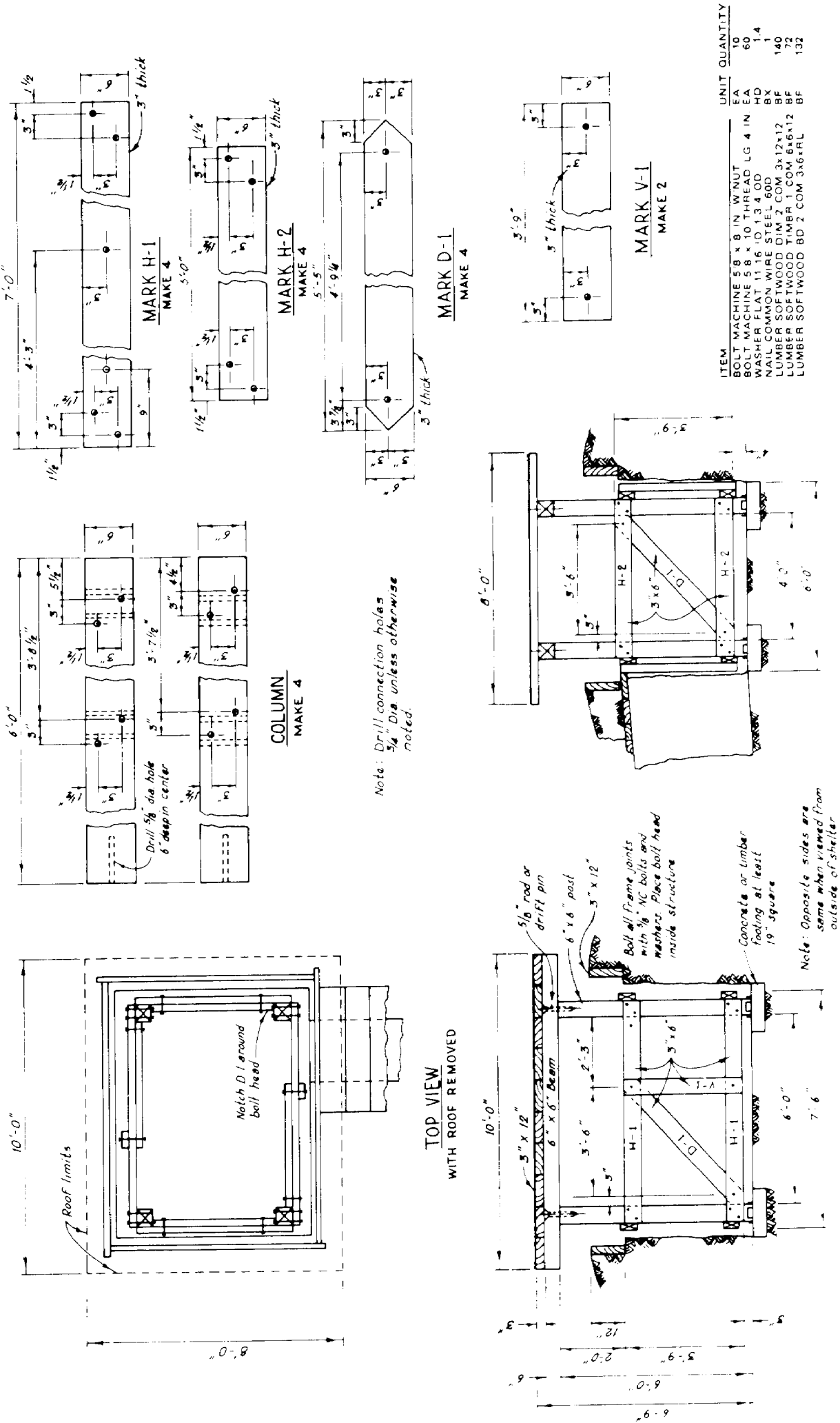
SECTION B-B

SECTION A-A

ITEM	UNIT	QUANTITY
STEEL BAR CARBON COLD FIN 3/8 x 3 IN W	FT	8
STEEL BAR CARBON COLD FIN 1/2 x 6 IN W	FT	28
STEEL ANGLE 2 IN. x 2 IN. x 1/4 IN. 3.19 LB. FT	FT	44
STEEL ANGLE 3 IN. x 3 IN. x 1/4 IN. LEG THICK	FT	30
PIPE STEEL 3 IN. x 12.22 FT BVL GRV ENDS	EA	5
BOLT MACHINE 7 x 3/4 IN. W NUT	EA	30
BOLT MACHINE 5/8 x 1 1/4 IN. W NUT	EA	5
WASHER FLAT SQ 3 00 x 2500 x B1250/D	EA	5

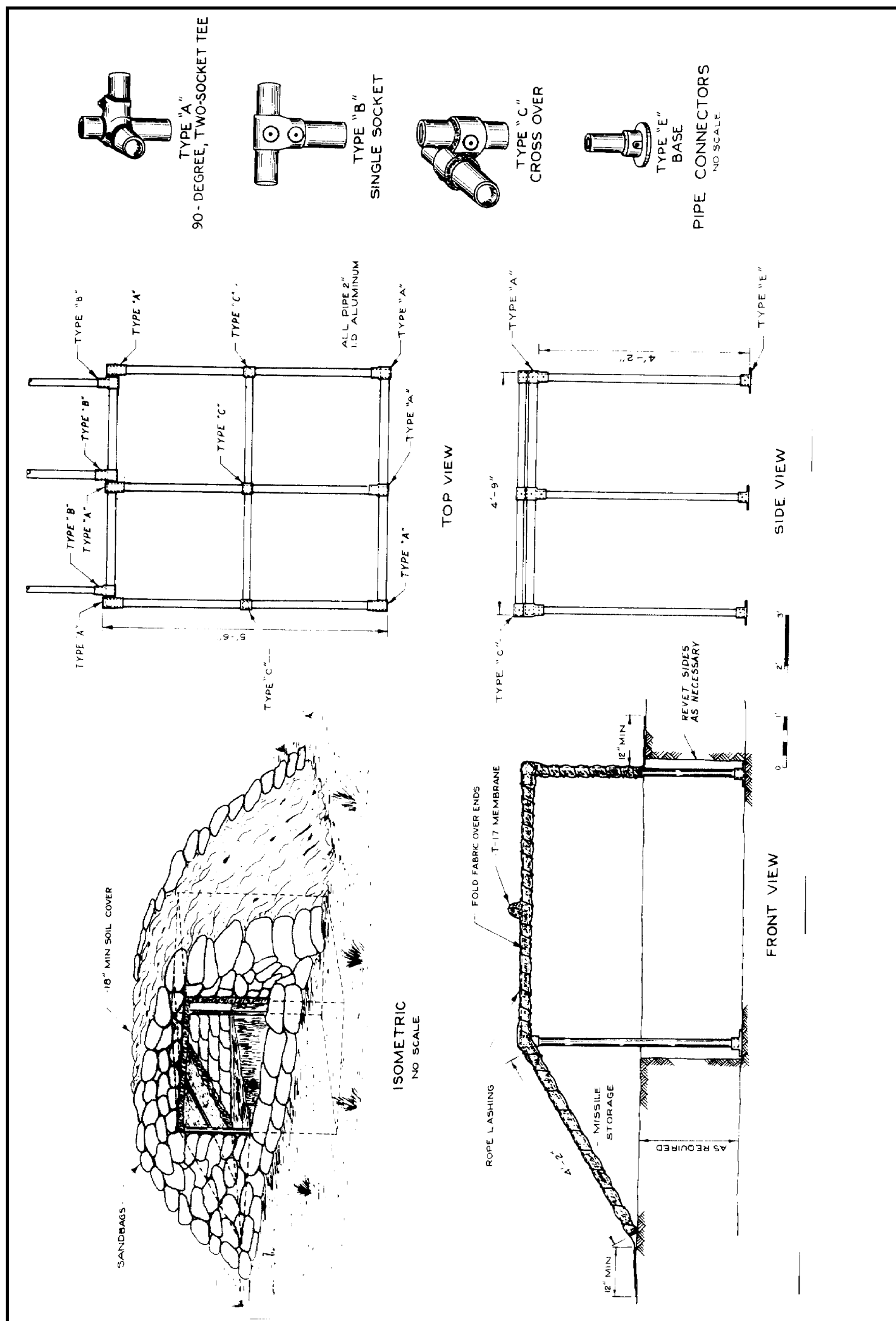
STEEL FRAME DETAILS

WOOD-FRAME FIGHTING POSITION (sheet 3 of 3)

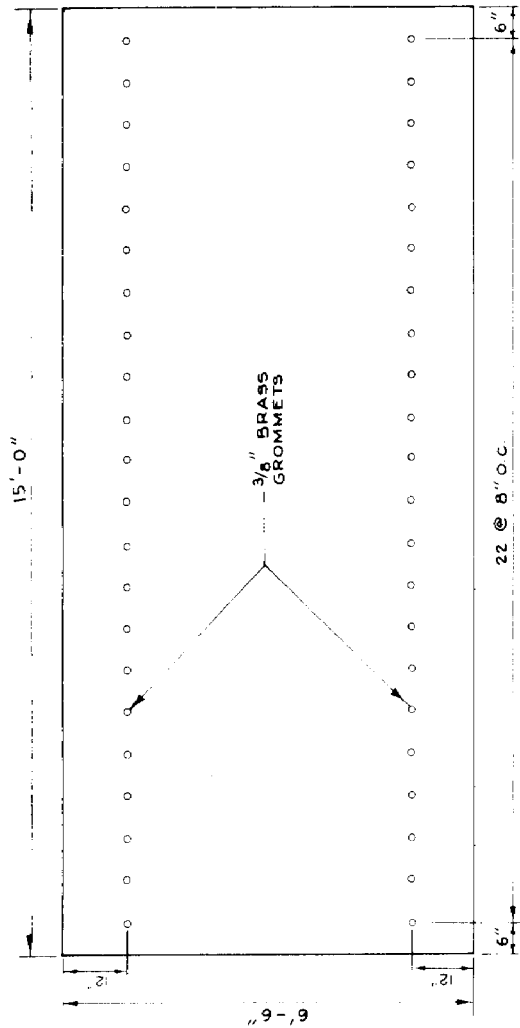


WOOD FRAME DETAILS

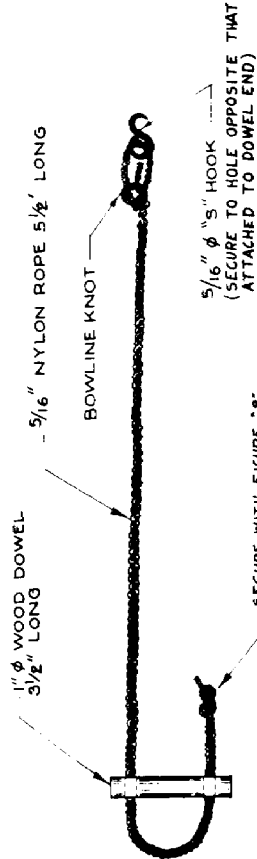
FABRIC-COVERED FRAME POSITION (sheet 1 of 2)



FABRIC-COVERED FRAME POSITION (sheet 2 of 2)



FABRIC CUTTING DETAIL



ALTERNATE FABRIC SECURING METHOD

NO SCALE

NOTE

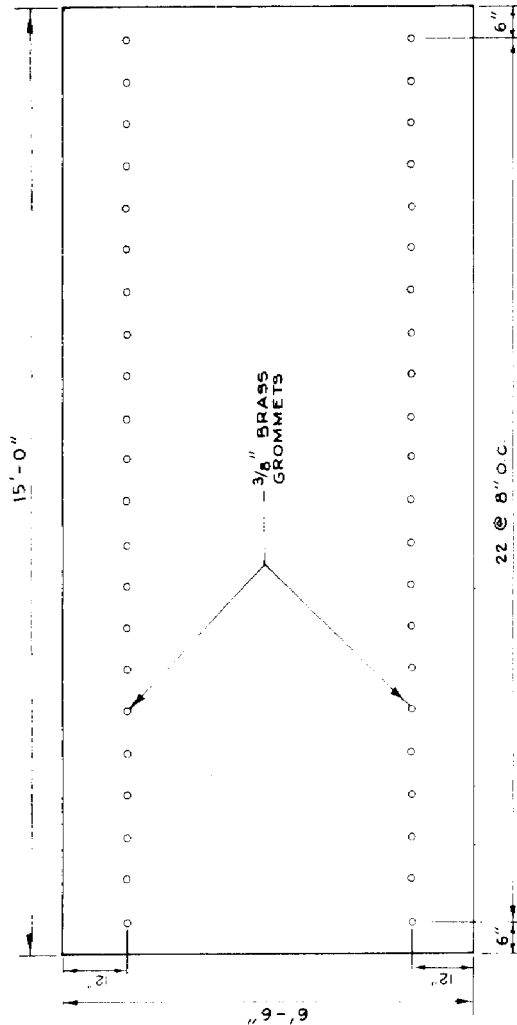
- PLACE "S" HOOK END OF ROPE LOCK AT EVERY THIRD HOLE ALONG FRONT EDGE OF FABRIC. SECURE DOWEL END AT MATCHING HOLE ALONG REAR EDGE AND TIGHTEN SECURELY

ITEM	UNIT	QUANTITY
PIPE ALUMINUM ALLOY 6061 2-IN. ID SCHEDULE 40 - 20 FT	FT	69
ROPE FIBROUS NYLON 2600 LB BREAKING 5/16 IN. DIA.	FT	100
PIPE CLAMP SINGLE-SOCKET TEE 2 IN.	EA	3
PIPE CLAMP TWO-SOCKET TEE 90° 2 IN.	EA	6
PIPE CLAMP CROSSEVER 2 IN.	EA	3
PIPE CLAMP FLOOR FLANGE 2 IN.	EA	4
GROMMET, METALLIC COPPER ALLOY NO. 2	HD	1
T-17 MEMBRANE SET TAXIWAY 3000 SQ FT	SY	12
BAG, SAND COTTON	EA	200

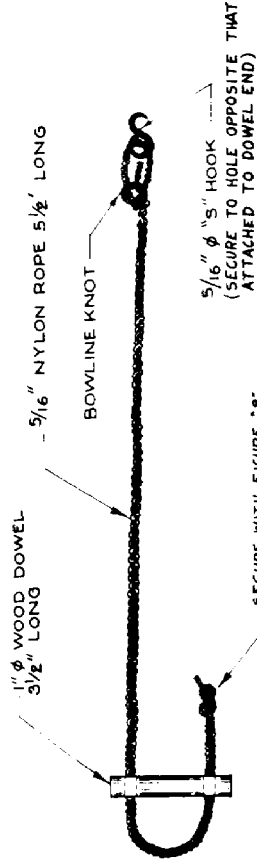
- GENERAL NOTES:
- THE PARTIALLY BURIED STRUCTURE ILLUSTRATED WAS DESIGNED TO SERVE THE TOW ANTI-TANK WEAPON; HOWEVER, WITH SLIGHT MODIFICATION IT WOULD BE USEFUL AS A MACHINE GUN OR INDIVIDUAL WEAPON POSITION.
 - ALL ALUMINUM PIPE IS 2-IN. I.D. NO. 6061-T6 ALLOY, SCHEDULE 40.
 - A SINGLE-PLY NEOPRENE COATED NYLON FABRIC WITH A BREAKING STRENGTH OF AT LEAST 170 LBS MAY BE SUBSTITUTED FOR THE T-17 MEMBRANE COVERING FABRIC USED ON THIS STRUCTURE.
 - SECURE MEMBRANE TO FRAME BY LASHING FRONT AND REAR EDGES ALONG APRON, ROOF, AND SIDES. CUT ROPE AND TIE EVERY 2 FT TO PREVENT COLLAPSE OF ROOF SHOULD LASHING BE CUT.

NOTE: FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY NO. 14931BA, TM 5-301 THRU 5-303.

FABRIC-COVERED FRAME POSITION (sheet 2 of 2)



FABRIC CUTTING DETAIL



SECURE WITH FIGURE "8" KNOT AFTER PASSING ROPE THROUGH HOLE IN FABRIC AND REMAINING DOWEL END

5/16" ϕ "S" HOOK (SECURE TO HOLE OPPOSITE THAT ATTACHED TO DOWEL END)

ALTERNATE FABRIC SECURING METHOD

NO SCALE

NOTE

- PLACE "S" HOOK END OF ROPE LOCK AT EVERY THIRD HOLE ALONG FRONT
- EDGE OF FABRIC. SECURE DOWEL END AT MATCHING HOLE ALONG REAR EDGE AND TIGHTEN SECURELY

ITEM	UNIT	QUANTITY
PIPE ALUMINUM ALLOY 6061 2-IN. ID SCHEDULE 40 - 20 FT	FT	69
ROPE FIBROUS NYLON 2600 LB BREAKING 5/16 IN. DIA.	FT	100
PIPE CLAMP SINGLE-SOCKET TEE 2 IN.	EA	3
PIPE CLAMP TWO-SOCKET TEE 90° 2 IN.	EA	6
PIPE CLAMP CROSSEVER 2 IN.	EA	3
PIPE CLAMP FLOOR FLANGE 2 IN.	EA	4
GROMMET, METALLIC COPPER ALLOY NO. 2	HD	1
T-17 MEMBRANE SET TAXIWAY 3000 SQ FT	SY	12
BAG, SAND COTTON	EA	200

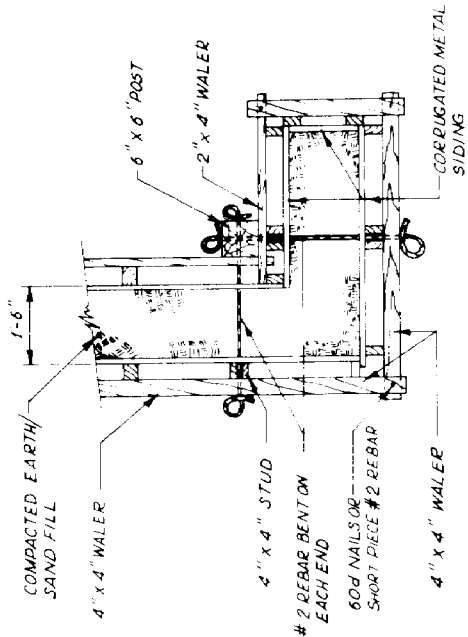
GENERAL NOTES:

- THE PARTIALLY BURIED STRUCTURE ILLUSTRATED WAS DESIGNED TO SERVE THE TOW ANTI-TANK WEAPON. HOWEVER, WITH SLIGHT MODIFICATION IT WOULD BE USEFUL AS A MACHINE GUN OR INDIVIDUAL WEAPON POSITION.
- ALL ALUMINUM PIPE IS 2-IN. I. D. NO. 6061-T6 ALLOY, SCHEDULE 40.
- A SINGLE-PLY NEOPRENE COATED NYLON FABRIC WITH A BREAKING STRENGTH OF AT LEAST 170 LBS MAY BE SUBSTITUTED FOR THE T-17 MEMBRANE COVERING FABRIC USED ON THIS STRUCTURE.
- SECURE MEMBRANE TO FRAME BY LASHING FRONT AND REAR EDGES ALONG APRON, ROOF, AND SIDES. CUT ROPE AND TIE EVERY 2 FT TO PREVENT COLLAPSE OF ROOF SHOULD LASHING BE CUT.

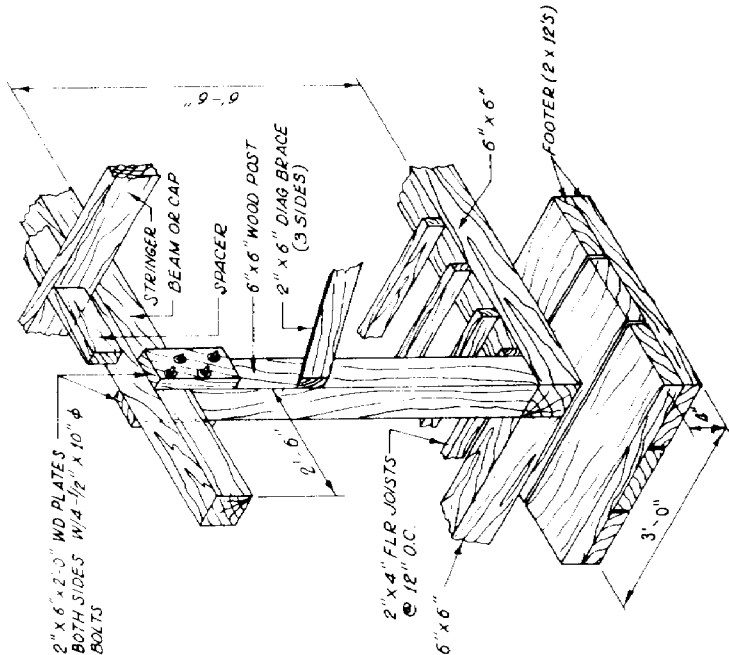
NOTE: FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY NO. 14931BA, TM 5-301 THRU 5-303.

CORRUGATED METAL FIGHTING BUNKER (sheet 2 of 2)

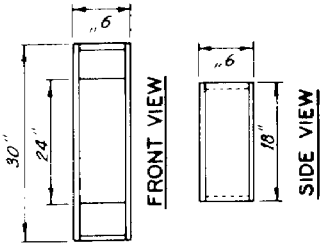
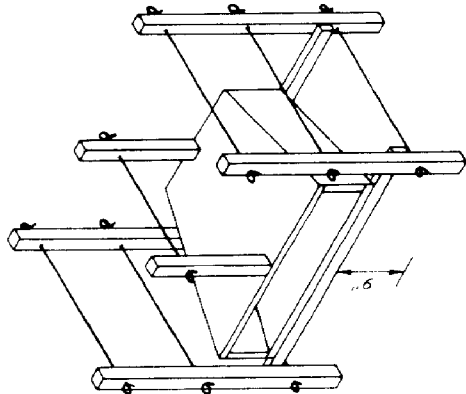
BILL OF MATERIALS				
ITEM	UNIT	QUANTITY	REMARKS	
1. 1" x 12" x 8'	EA	10		
2. 2" x 4" x 10'	EA	25		
3. 2" x 6" x 10'	EA	6		
4. 2" x 12" x 14'	EA	24	ROOF DECKS AND BEAMS	
5. 4" x 4" x 10'	EA	18		
6. 4" x 4" x 12'	EA	7		
7. 4" x 4" x 14'	EA	9		
8. 4" x 6" x 14'	EA	14	STRINGERS	
9. 6" x 6" x 8'	EA	6	POSTS	
10. 1/2" BOLTS 10" W/NUTS	EA	24		
11. #2 REBAR, 4'-6" LONG	EA	35		
12. CORRUGATED SHEET METAL GALV., 96" x 27 1/2" (29 GA)	SH	36		
13. NAILS, 16d	LB	10		
14. NAILS, 30d	LB	20		
15. NAILS, 60d	LB	20		
16. BUILDING PAPER	SQ FT	170		



TYPICAL WALL REVETMENT DETAIL



TYPICAL DETAIL OF CONNECTIONS

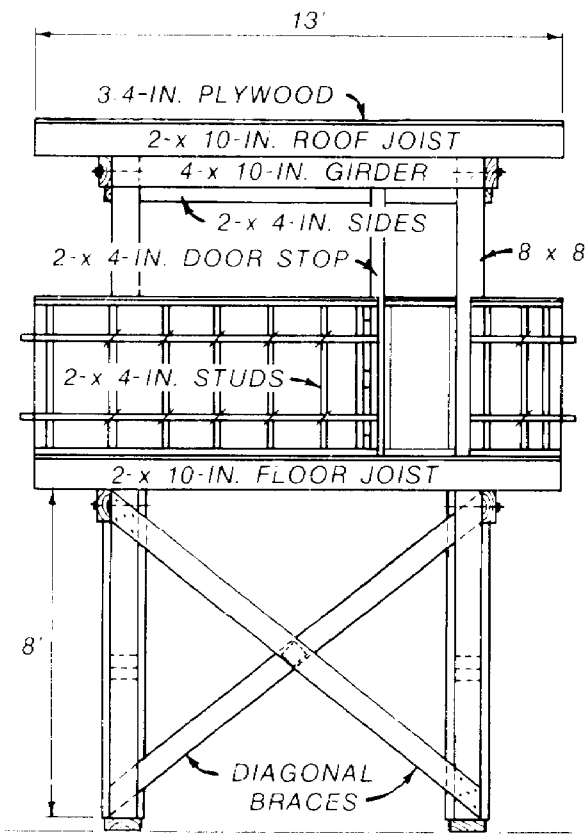


THE FIRING PORT EMBRASURE IS CONSTRUCTED AS FOR BUNKER S4. SAME TYPE BOX.

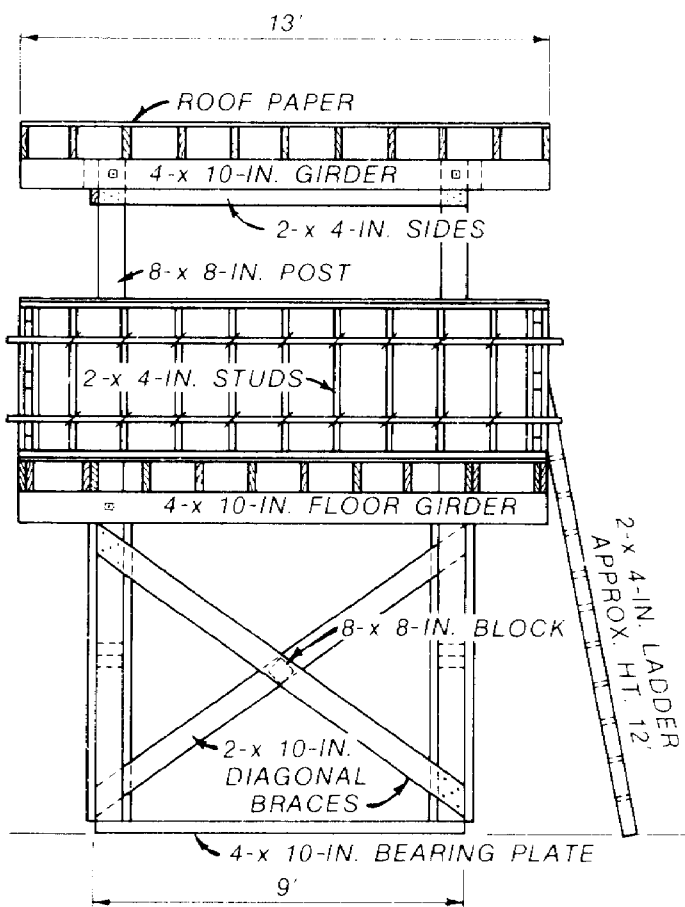
DETAIL "B"

FIRING PORT DETAIL

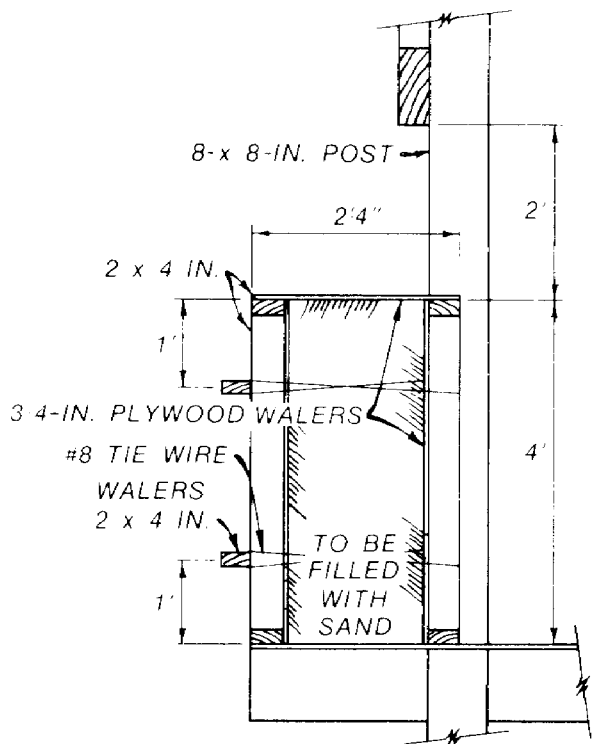
PLYWOOD PERIMETER BUNKER



FRONT ELEVATION



TYPICAL SIDE ELEVATION



TYPICAL WALL SECTION

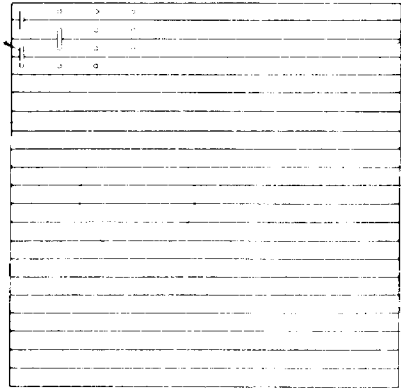
BILL OF MATERIALS

ITEM	UNIT	QUANTITY
2"x4"x12'	EA	120
2"x4"x14'	EA	30
2"x10"x14'	EA	40
4"x10"x14'	EA	17
8"x8"x16'	EA	4
4'x8'x3/4" PLWD	EA	32
NAILS, 20d	LB	50
NAILS, 60d	LB	25
BOLTS, 3/4"x14"	EA	8
ROOF PAPER	SF	200

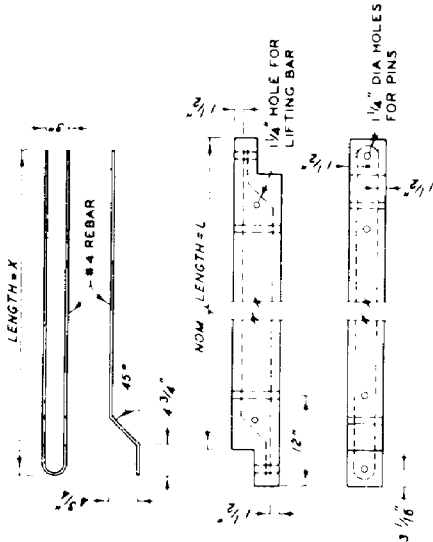
NOTE: THIS BUNKER CAN BE ELEVATED AS SHOWN OR BUILT DIRECTLY ON THE GROUND.

CONCRETE LOG BUNKER (sheet 1 of 2)

PIN ROOF LOGS TOGETHER
WITH "U" SHAPED #6 BARS (TYPICAL)



TOP VIEW



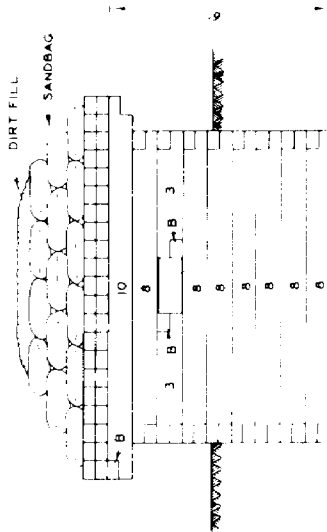
REINFORCING STEEL DETAILS

MATERIAL REQUIRED FOR DESCRIBED LOG BUNKER			
CONCRETE LOG LENGTH (FT)	REBAR LENGTH (FT)	MARK	NO. REQUIRED
2	7.2	2	11
3	3.2	3	17
6	6.2	6	6
8	8.2	8	18
10	10.2	10	25
BLOCKS 0.5 x 0.5	NONE	TOTAL	16
			93

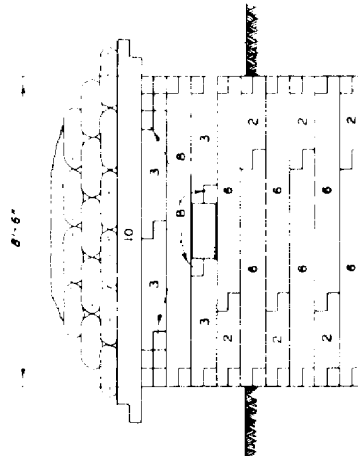
BILL OF MATERIAL

CONCRETE 5.5 CY
REINFORCING STEEL 4 - 20 #
VERTICAL ROOS 6 BARS 20 #
U SHAPED ROOF PINS 18 BOX 20 #
NOTE 3/4 PIPE MAY BE USED FOR VERTICAL ROOS

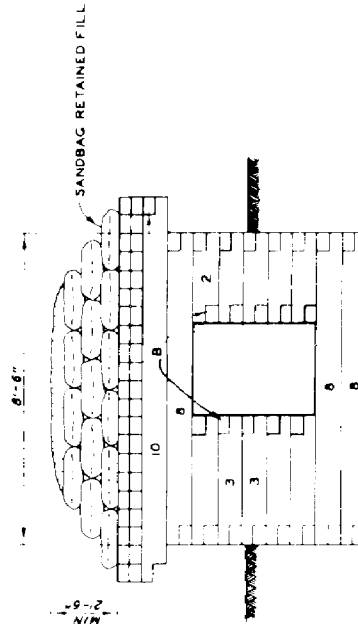
- GENERAL NOTES:
1. MATERIAL SPECIFICATIONS:
CONCRETE - PORTLAND CEMENT, SAND AND COARSE AGGREGATE -
SAND AGGREGATE TO PROPORTIONS FOR 3000 PSI COMPRES-
SIVE STRENGTH IN 28 DAYS
CONCRETE REINFORCING STEEL - INTERMEDIATE GRADE, 4000 PSI
TENSILE STRENGTH
CONCRETE LOG PINS - 3/4 IN. (NOMINAL) DIA STEEL PIPE OR #6
REBAR
FLOOR - EARTH - IF ADDITIONAL HEADROOM IS DESIRED, FLOOR
CAN BE EXCAVATED BELOW BOTTOM LOGS OR ADDITIONAL LOGS
CAN BE ADDED TO SIDES
WALL -
CONCRETE LOGS - ALL LOGS ARE VERTICALLY PINNED 12 IN. ON
CENTER ALONG EACH WALL; ROOF PINNED AS SHOWN IN TOP
VIEW
BUNKER DESCRIBED HERE IS AS CONSTRUCTED FOR FORT
WOODEN MODEL LOGS AND DESIGN LOG BUNKERS TO SUIT THEIR
SPECIFIC REQUIREMENTS
RIGHT SIDE VIEW COULD BE CONSTRUCTED FROM 8 FT LOGS
RIGHT SIDE VIEW COULD BE CONSTRUCTED FROM 10 FT LOGS
STAGGERING LOG BUTT JOINTS
FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY 040301.
TM 5-302



FRONT

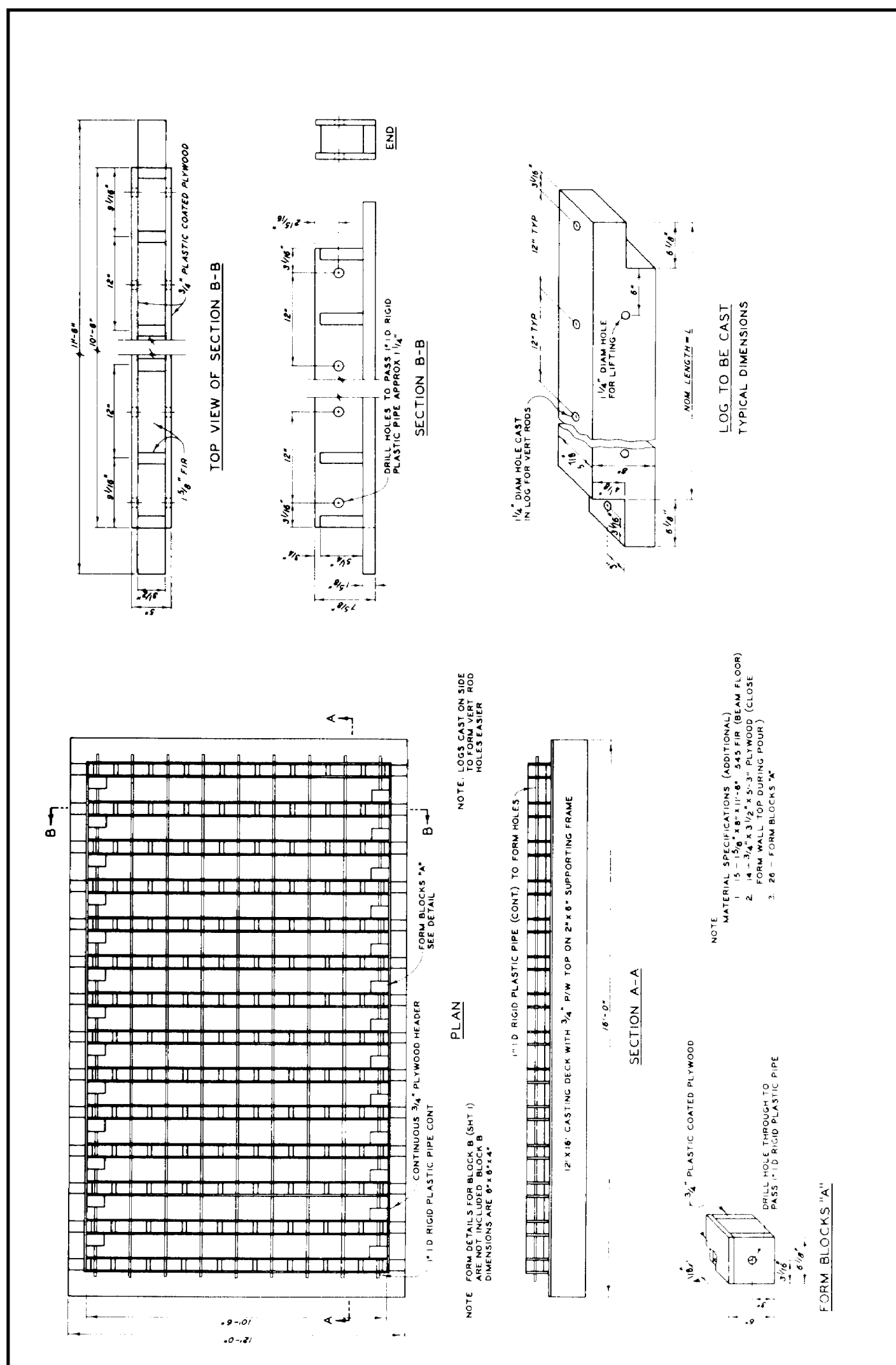


RIGHT SIDE

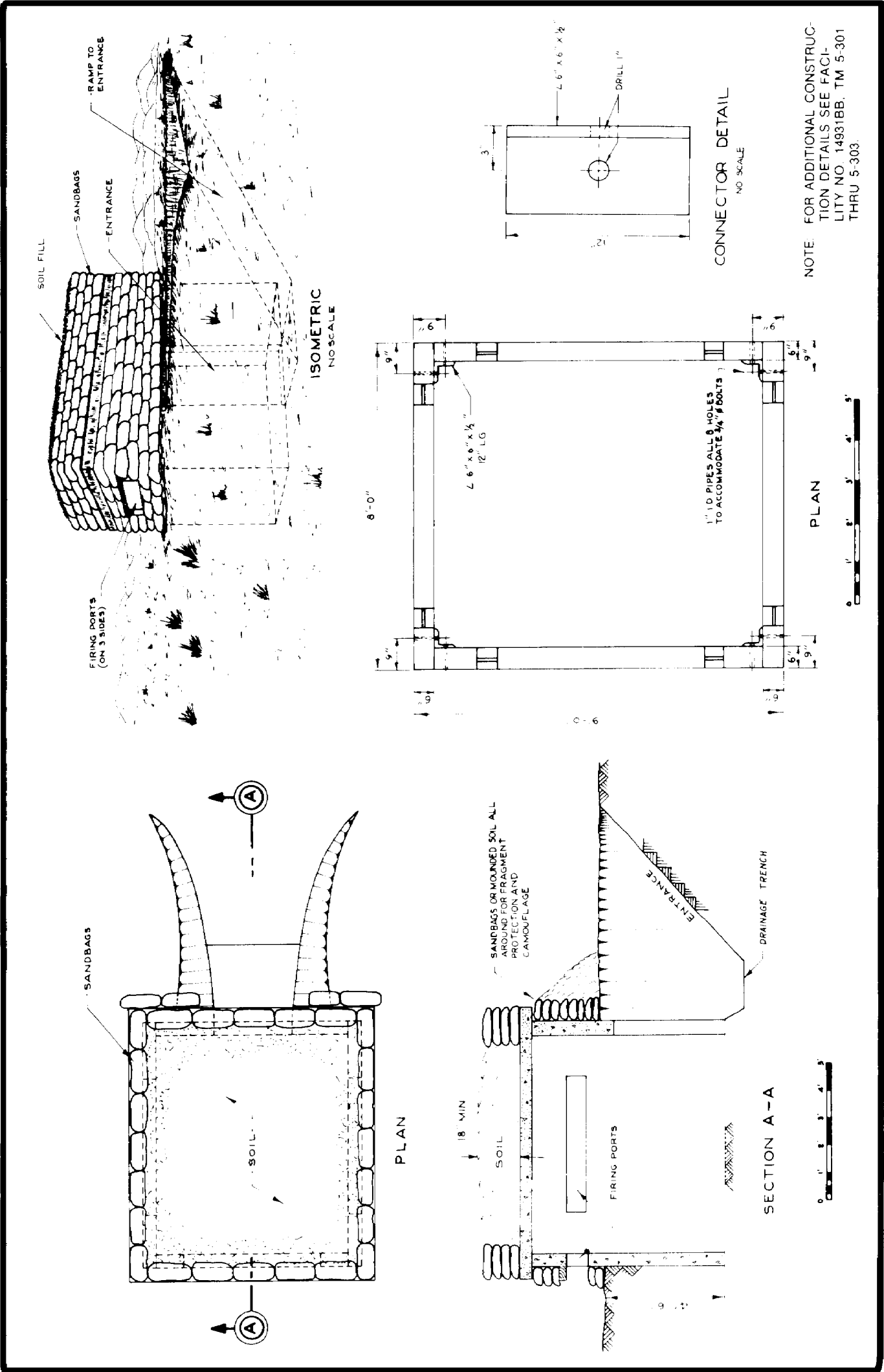


REAR VIEW

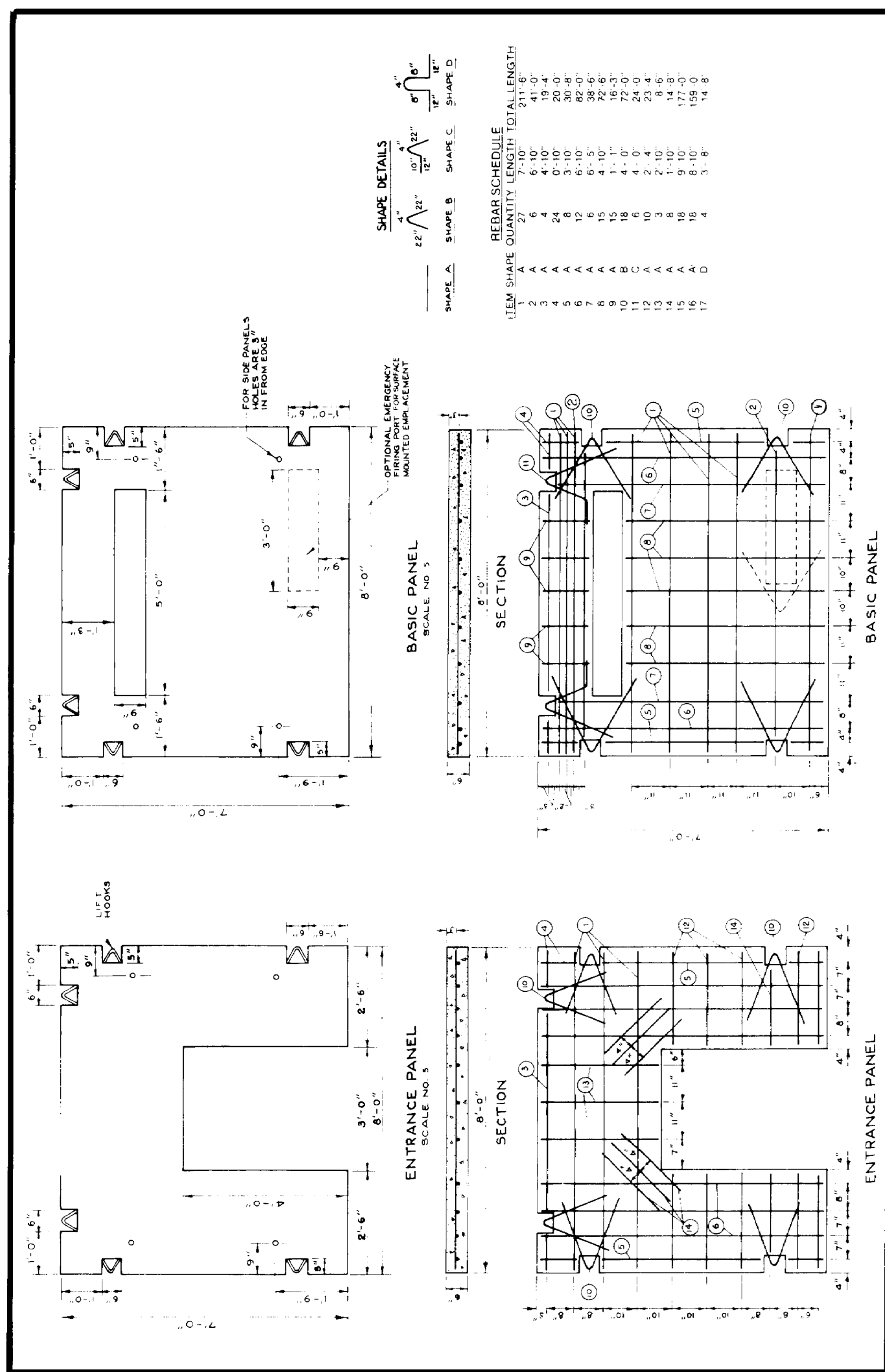
CONCRETE LOG BUNKER (sheet 2 of 2)

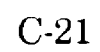


PRECAST CONCRETE SLAB BUNKER (sheet 1 of 3)

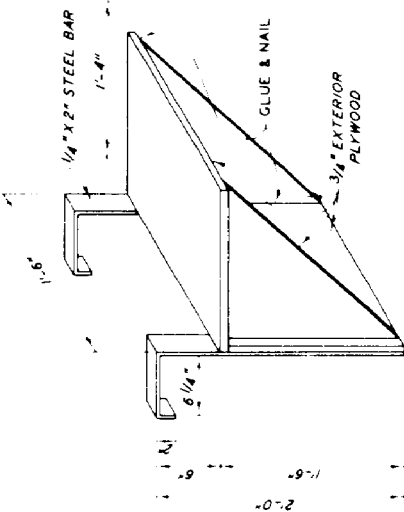
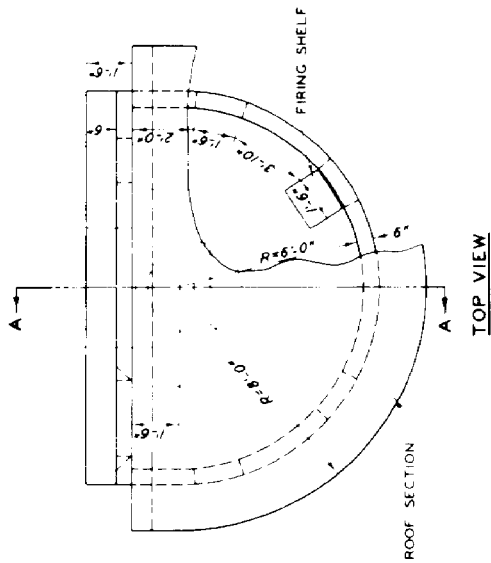


PRECAST CONCRETE SLAB BUNKER (sheet 2 of 3)



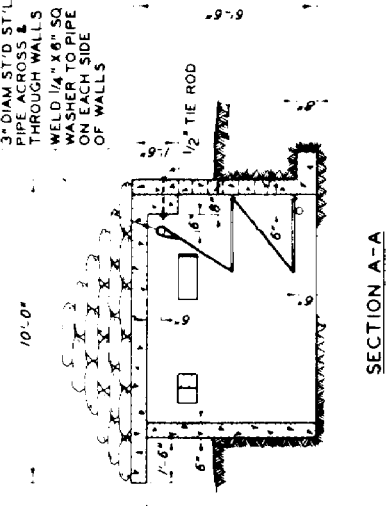
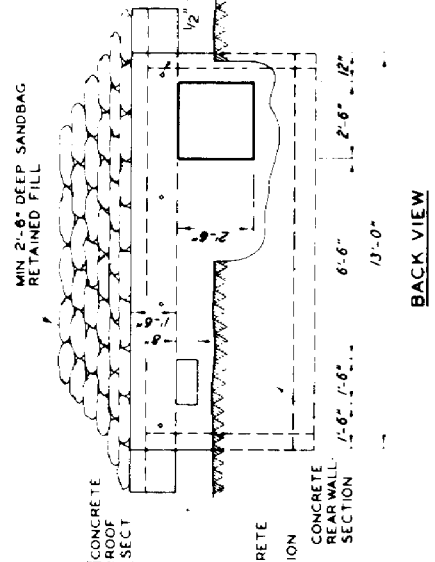
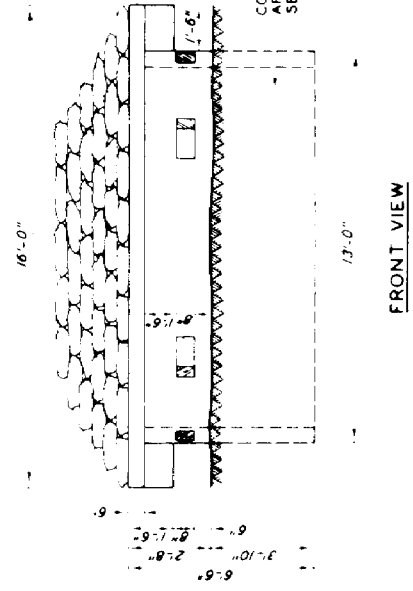


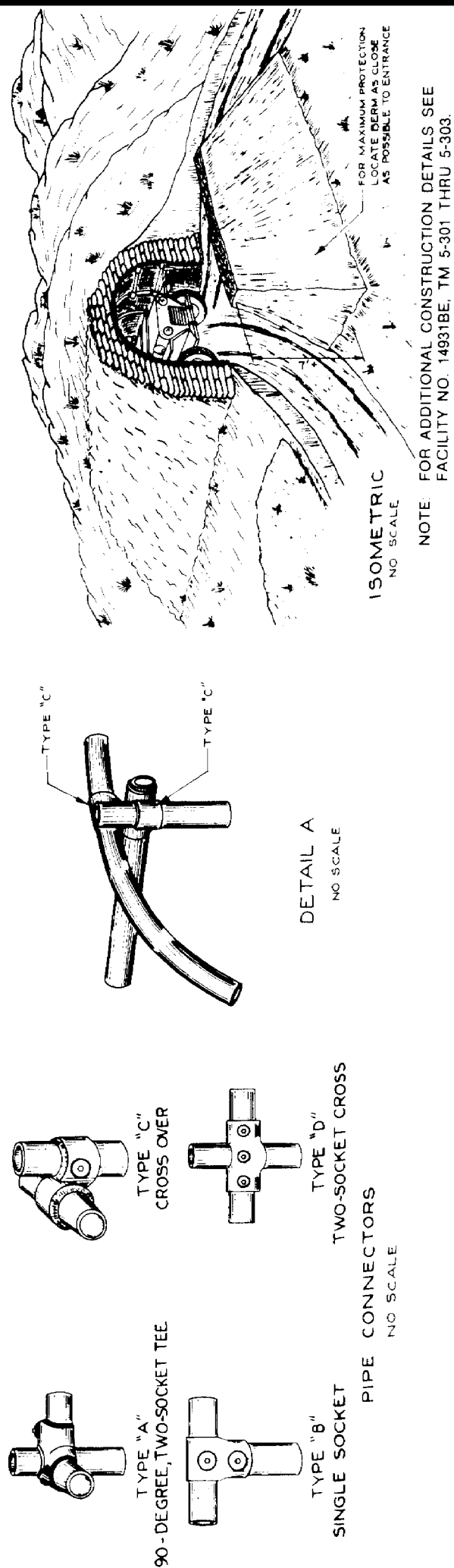
CONCRETE ARCH BUNKER



ITEM	UNIT	QUANTITY
BOLT MACHINE 1/2 x 16 IN. CAD/ZN PLD	EA	5
WASHER FLAT ROUND 5/16 IN. 1D x 7/8 OD	EA	20
SHIELD EXPANSION 3/8 IN. x 1-1/4 L/4	EA	10
CEMENT PORT GEN CONC CONSTR 94 LB	BG	48
AGGREGATE COARSE LOCAL PROCUREMENT	CY	7.3
AGGREGATE FINE LOCAL PROCUREMENT	CY	3.6
STEEL BAR REINFORCING 1/2 IN. x 20 FT	LG	144
STEEL BAR REINFORCING 3/4 IN. DIA	LG	1
BAG SAND ACRYLIC 26 IN. LG x 14 IN. WI	HD	1.5
STEEL BAR CARBON COLD FIN 1/4 x 2 IN. W	FT	32
PIPE CULV NEST STL 2 SECT 4 FT x 25.5 IN.	EA	10
PIPE STEEL 3 IN. x 12.22 FT BVL GRV ENDS	FT	28

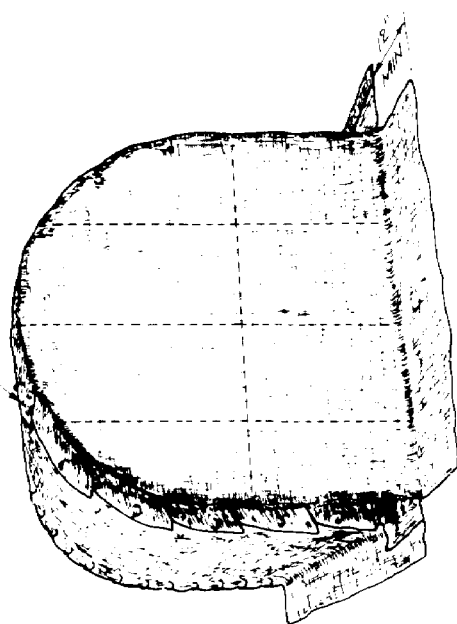
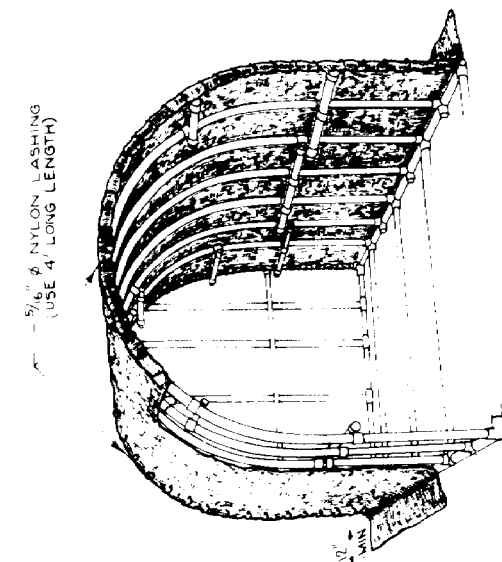
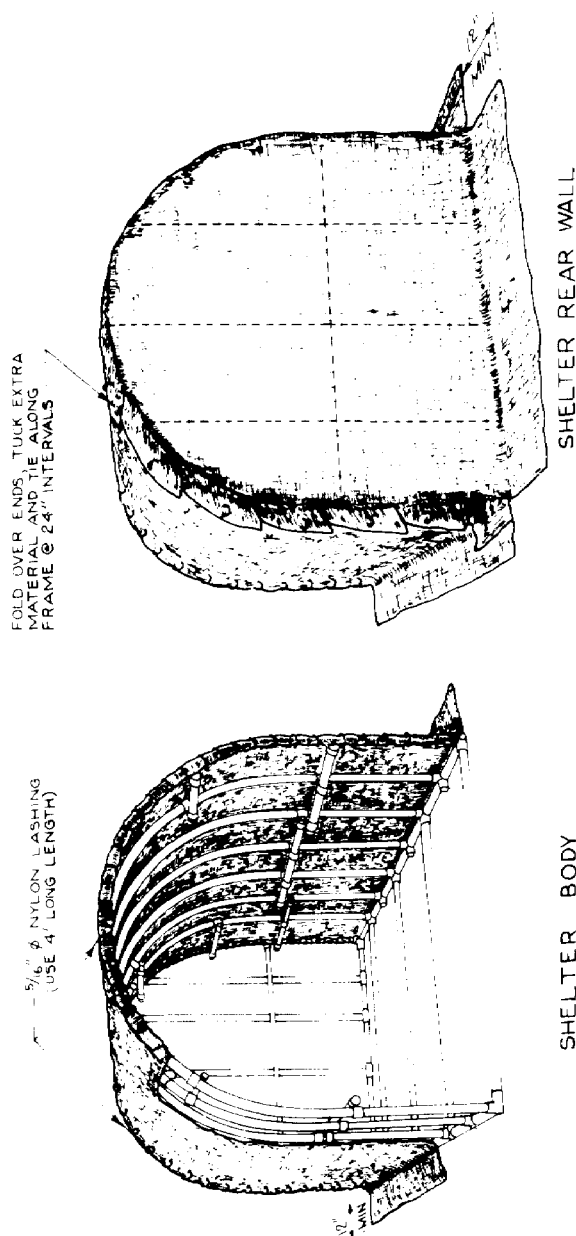
NOTE: FORMING AND REINFORCING STEEL DETAILS ARE AS DESCRIBED FOR THE CONCRETE ARCH SHELTER PRESENTED IN SECTION III, CHAPTER 4, APPENDIX D.





NOTE: FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY NO. 14931BE, TM 5-301 THRU 5-303.

COVERED DEEP-CUT POSITION (sheet 2 of 2)



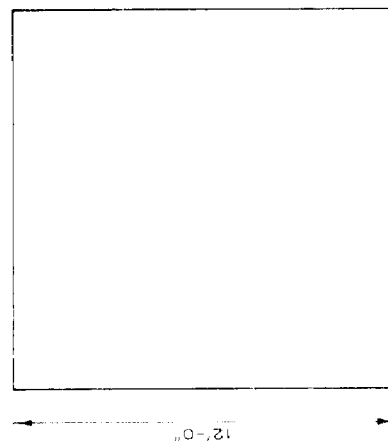
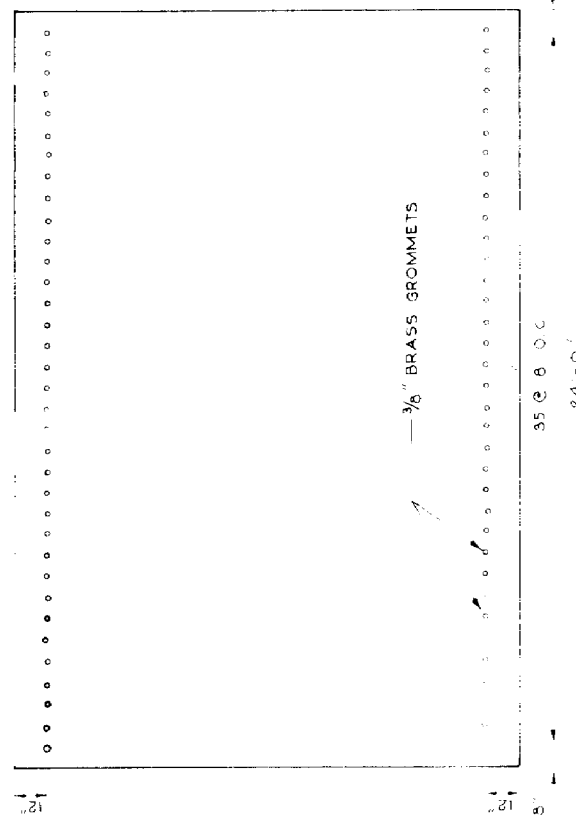
SHELTER BODY

FABRIC INSTALLATION
NO SCALE

GENERAL NOTES:

- 1 MATERIAL SPECIFICATIONS
ALUMINUM PIPE 2" IN I.D. NO. 6061-T6, SCHEDULE 40
FABRIC T-16 OR 17 AIRFELD SURFACE MEMBRANE (A SINGLE-PLY NEOPRENE COATED NYLON FABRIC WITH A BREAKING STRENGTH OF AT LEAST 170 LBS MAY BE USED).
- 2 PRIOR TO ASSEMBLY, POSITION AND SECURE THE CONNECTORS TO SILLS AND RIDGE BEAM.
- 3 ASSEMBLY INSTRUCTIONS
 - a LAY OUT SILLS AND CONNECT FLOOR SPREADERS
 - b INSTALL ARCH RIBS AT EACH END TO SUPPORT RIDGE BEAM
 - c ADD REMAINING ARCH RIBS WORKING FROM THE ENDS. DO NOT TIGHTEN CONNECTORS UNTIL LAST RIB IS POSITIONED
 - d PLACE AND SECURE ENDWALL POSTS AND ARCH SPREADERS
 - e INSTALL FABRIC AROUND ARCH AND SECURE ALONG END ARCH RIBS WITH 4 FT LONG PIECES OF NYLON ROPE. THE SHORT ROPE SEGMENTS ARE RECOMMENDED TO PREVENT STRUCTURE COLLAPSE SHOULD A SECTION OF THE ROPE BE CUT.
 - f REAR WALL FABRIC SHOULD EXTEND FORWARD TO THE SECOND RIB FROM BACK AND IS SECURED TO THAT RIB WITH WIRE TIES AT 24" INTERVALS. NO OTHER TIES ARE NECESSARY.
 - g BACKFILL SHOULD BE PLACED EVENLY ALONG THE SIDES BEFORE THAT THE REAR WALL IS PLACED. THIS IS VERY IMPORTANT TO PREVENT DEFORMATION OF THE STRUCTURE DURING CONSTRUCTION. PLACE 18 IN. OF SOIL MATERIAL OVER THE SHELTER.
 - h THE FLOOR SPREADERS SHOULD BE COVERED WITH SOIL SO THEY WILL NOT HAMPER EQUIPMENT MOVEMENT.

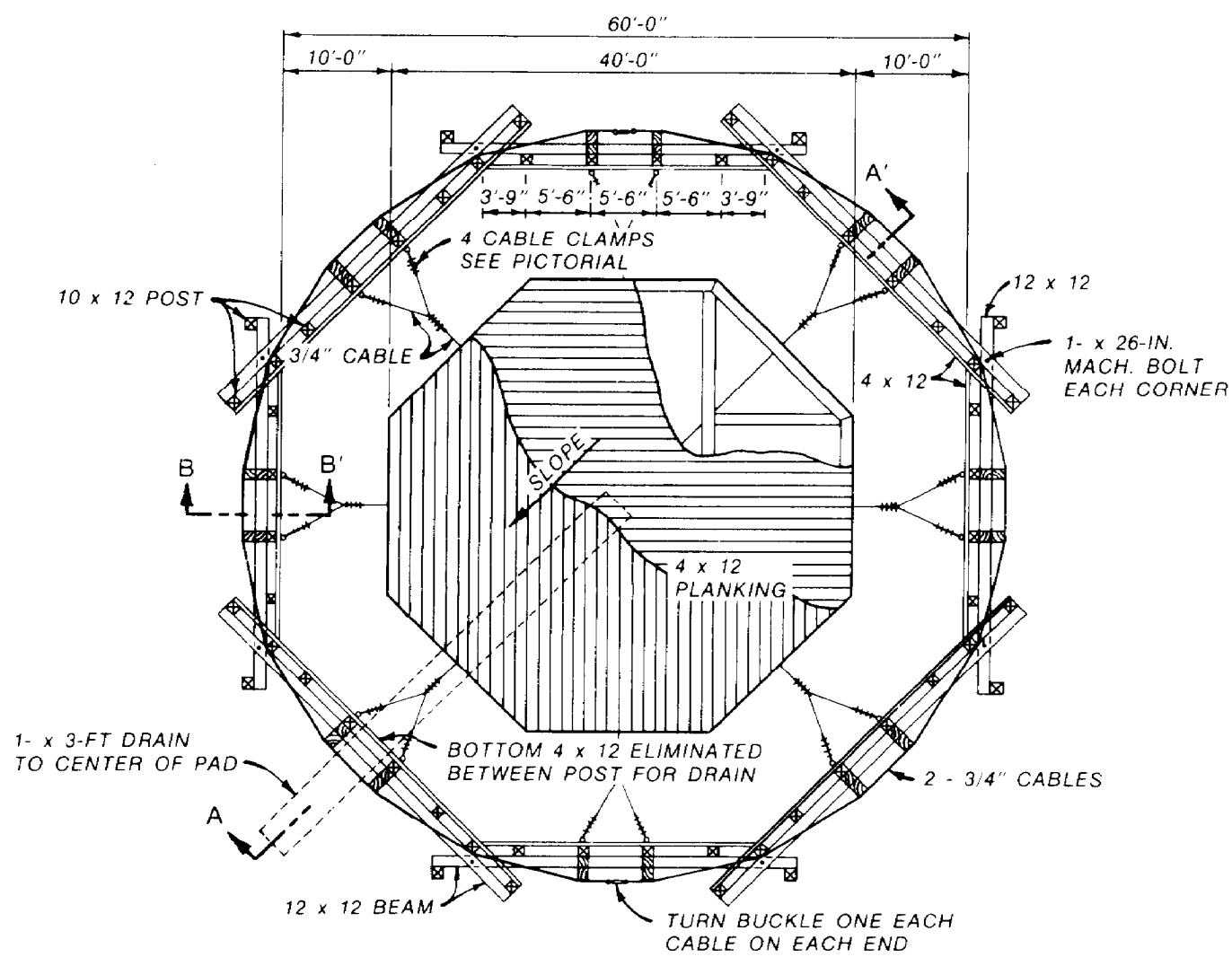
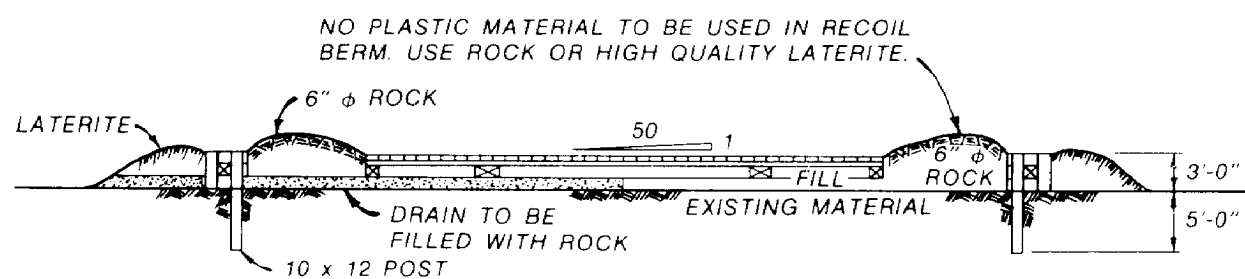
ITEM	UNIT	QUANTITY
ROPE, FIBROUS, NYLON 2600 LB BREAKING 5/16 IN. DIA.	FT	200
PIPE ALUM ALLOY 6061 2-IN. ID SCHEDULE 40 - 20 FT	LG	16
PIPE CLAMP SINGLE-SOCKET TEE 2 IN.	EA	2
PIPE CLAMP TWO-SOCKET TEE 90° 2 IN.	EA	16
PIPE CLAMP CROSSOVER 2 IN.	EA	38
PIPE CLAMP TWO-SOCKET CROSS 2 IN.	EA	8
GROMMET, METALLIC COP- PER ALLOY NO. 2	HD	1
T-17 MEMBRANE SET TAXI- WAY 3000 SQ FT	SY	70
WIRE STEEL NO. 1020 0.0625 IN. DIA 5 LB	CL	1



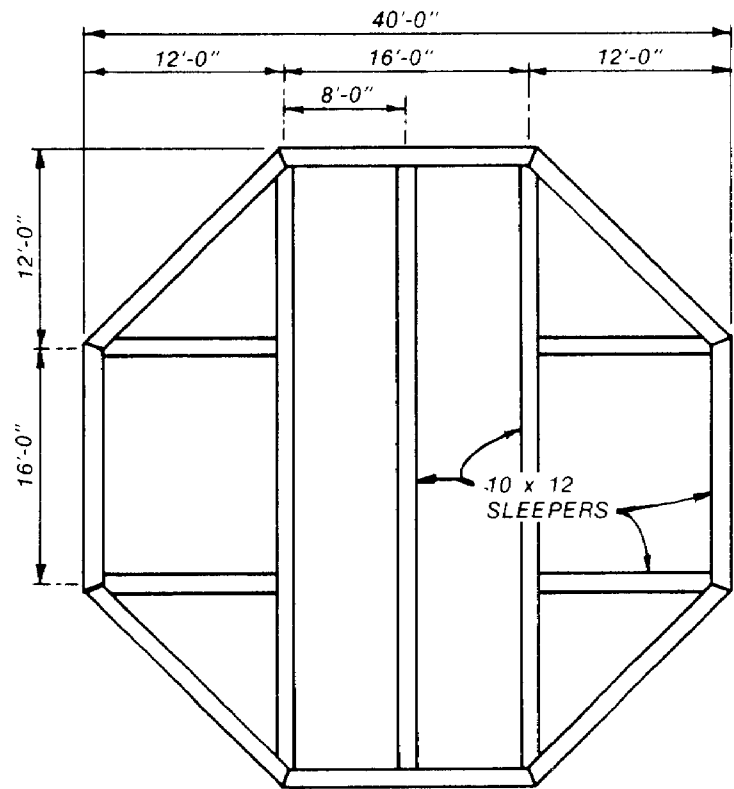
SHELTER BODY

END SECTION
FABRIC CUTTING DETAIL

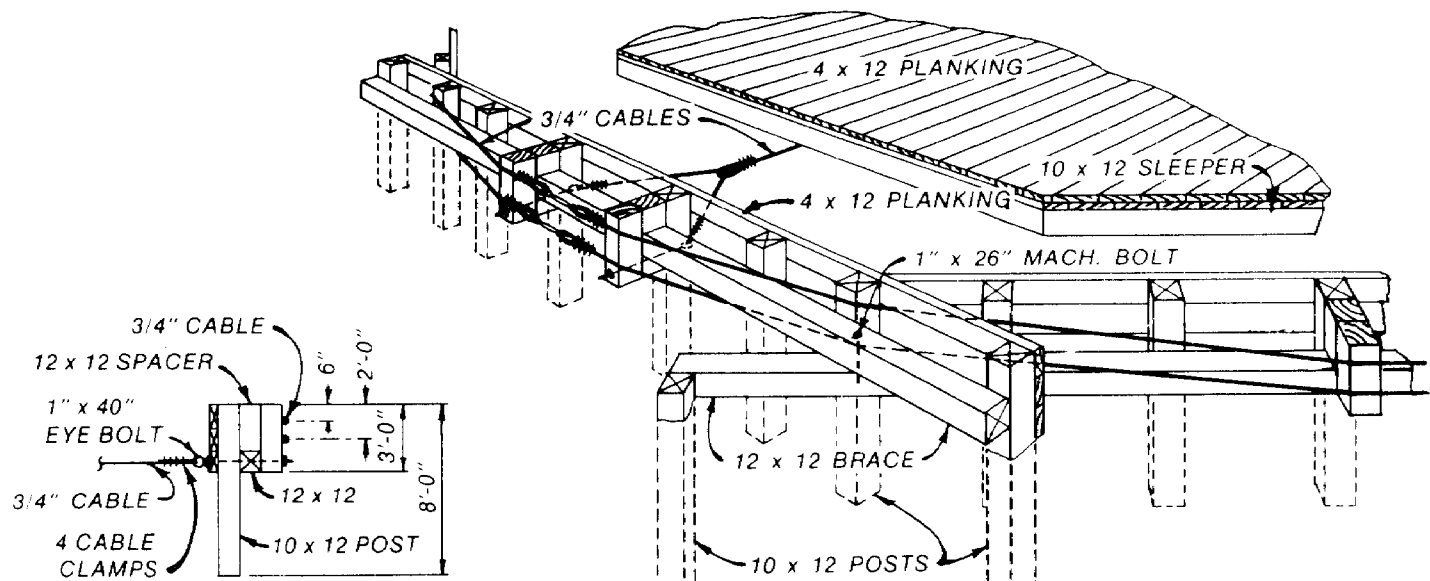
ARTILLERY FIRING PLATFORM (155MM, 175MM, AND 8-IN ARTILLERY) (sheet 1 of 3)

PLANSECTION A-A'

ARTILLERY FIRING PLATFORM (155MM, 175MM, AND 8-IN ARTILLERY) (sheet 2 of 3)



SLEEPER PLAN



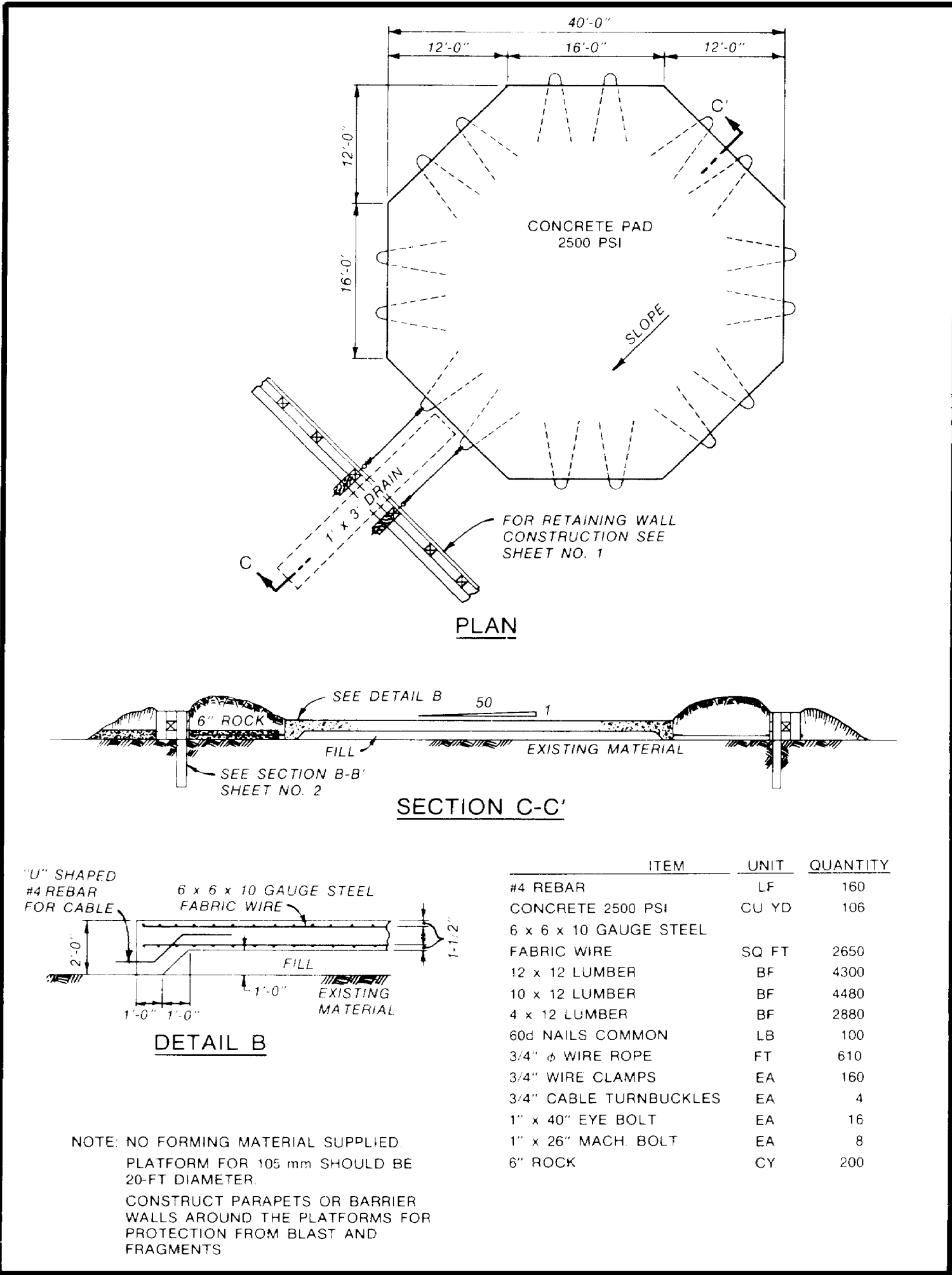
SECTION B-B'

ASSEMBLY PICTORIAL

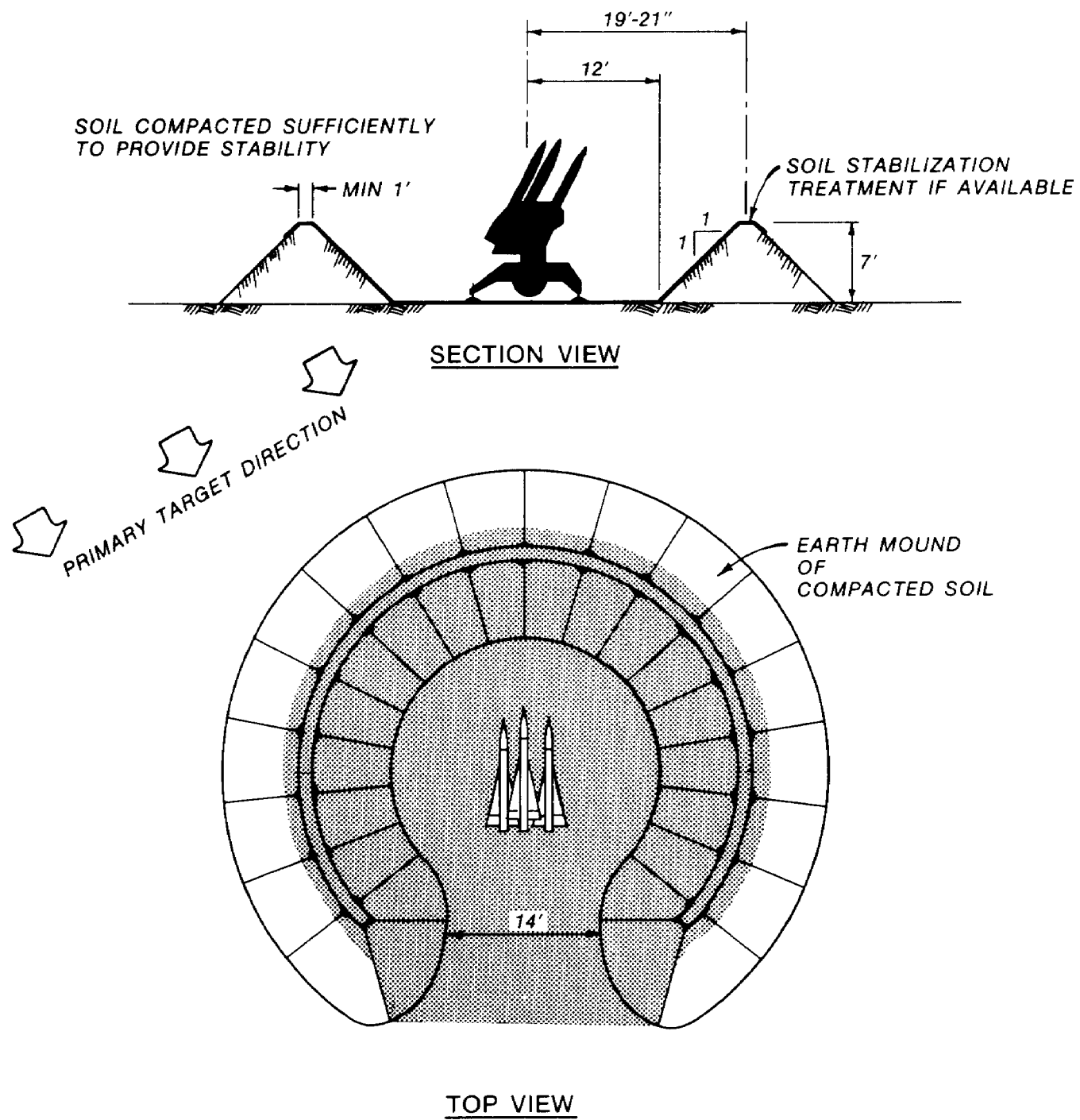
ITEM	UNIT	QUANTITY
12 x 12 LUMBER	BF	4,300
10 x 12 LUMBER	BF	8,200
4 x 12 LUMBER	BF	14,450
10" SPIKE	EA	1,500
60d NAILS COMMON	LB	100
3/4" DIAM. WIRE ROPE	FT	850
3/4" WIRE ROPE CLAMPS	EA	128
3/4" CABLE TURNBUCKLES	EA	4
1" x 40" EYE BOLT	EA	16
1" x 26" MACH. BOLT	EA	8
6" ROCK	CY	200

NOTE: AT ENTRANCE RAMP BACKFILL TO AT LEAST 1 FOOT OVER RETAINING WALL.
PLATFORM FOR 105-mm SHOULD BE 20-FT DIAMETER.
CONSTRUCT PARAPETS OR BARRIER WALLS AROUND THE PLATFORMS FOR PROTECTION FROM BLAST AND FRAGMENTS.

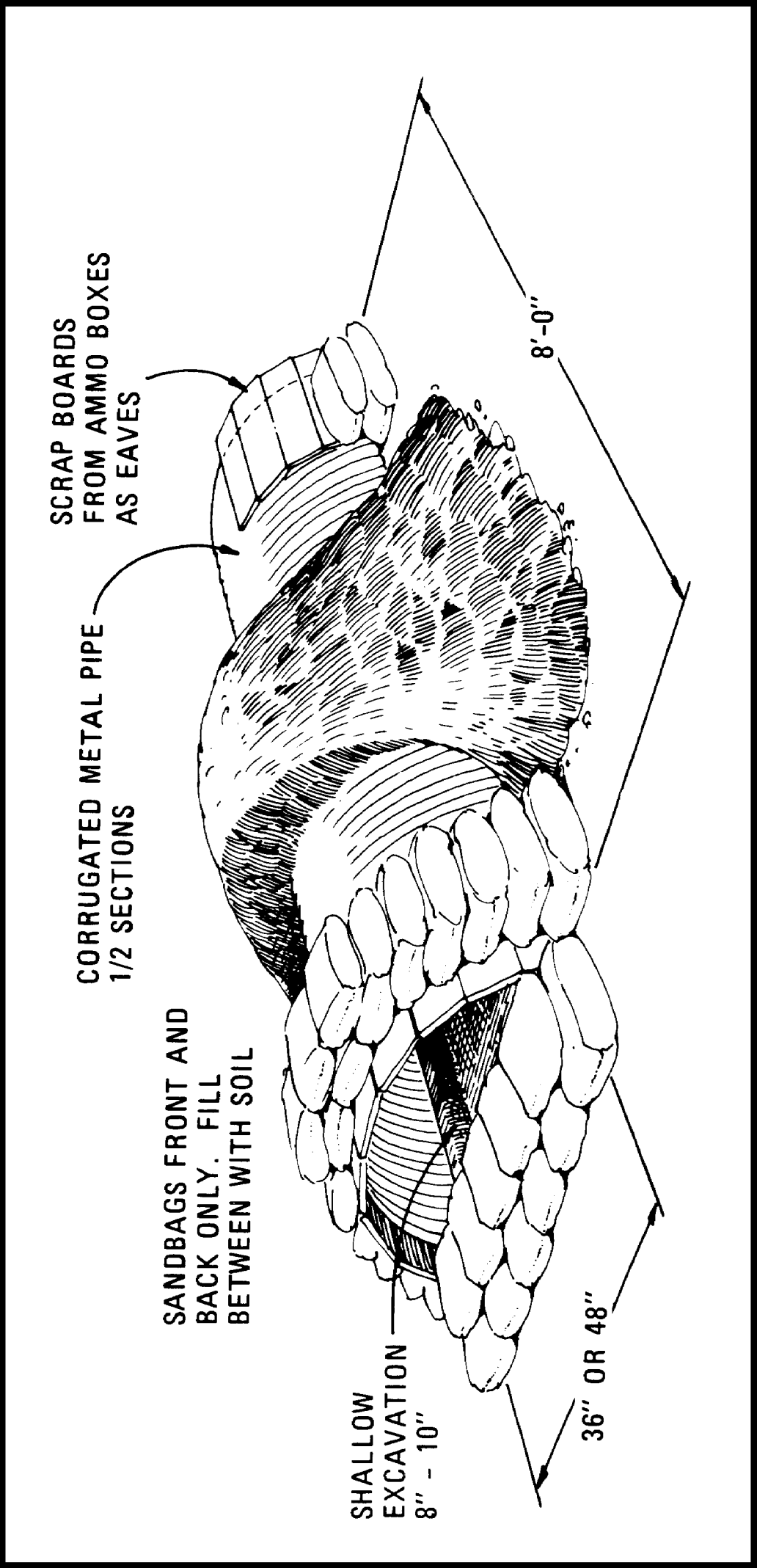
ARTILLERY FIRING PLATFORM (155MM, 175MM, AND 8-IN ARTILLERY) (sheet 3 of 3)



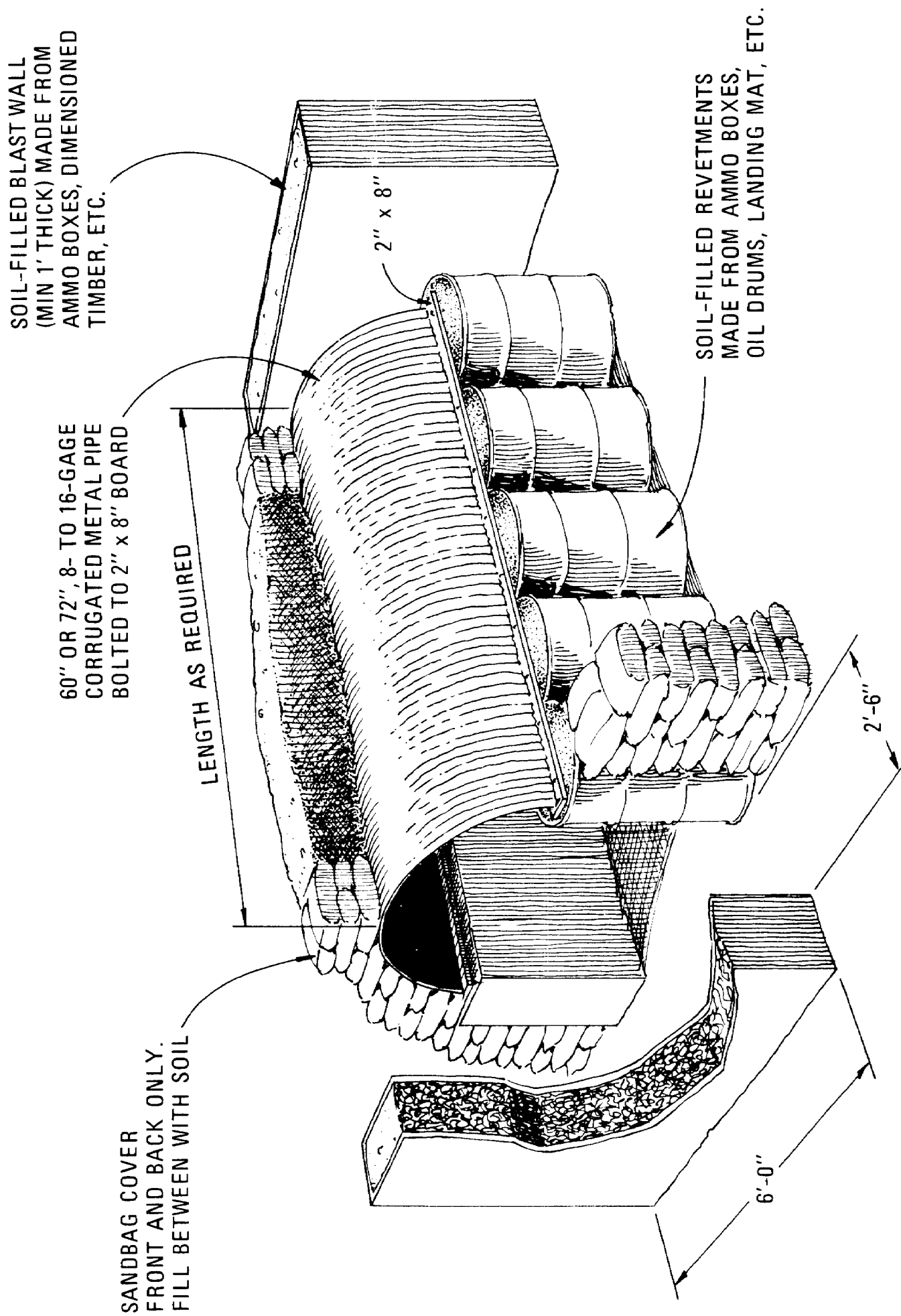
PARAPET POSITION FOR ADA



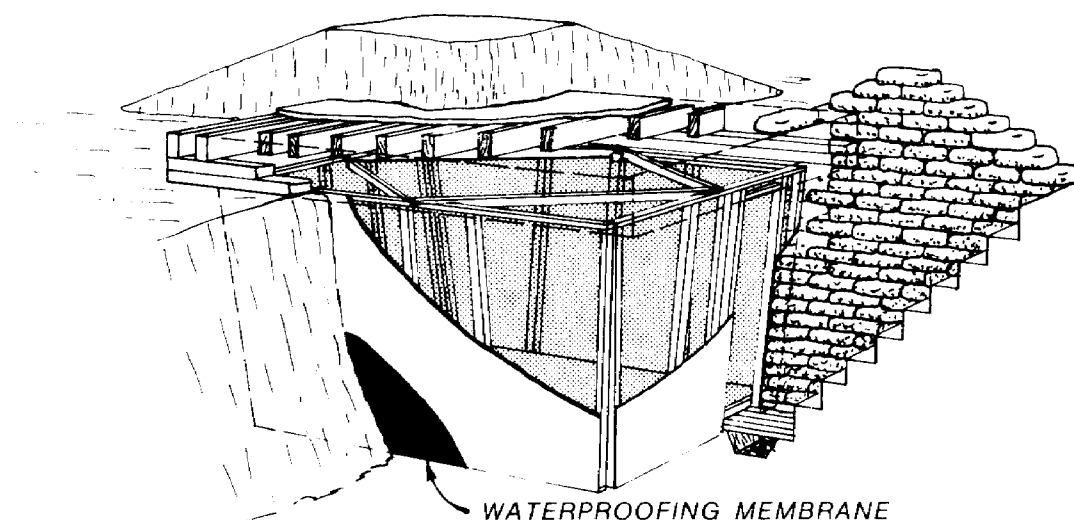
TWO-SOLDIER SLEEPING SHELTER



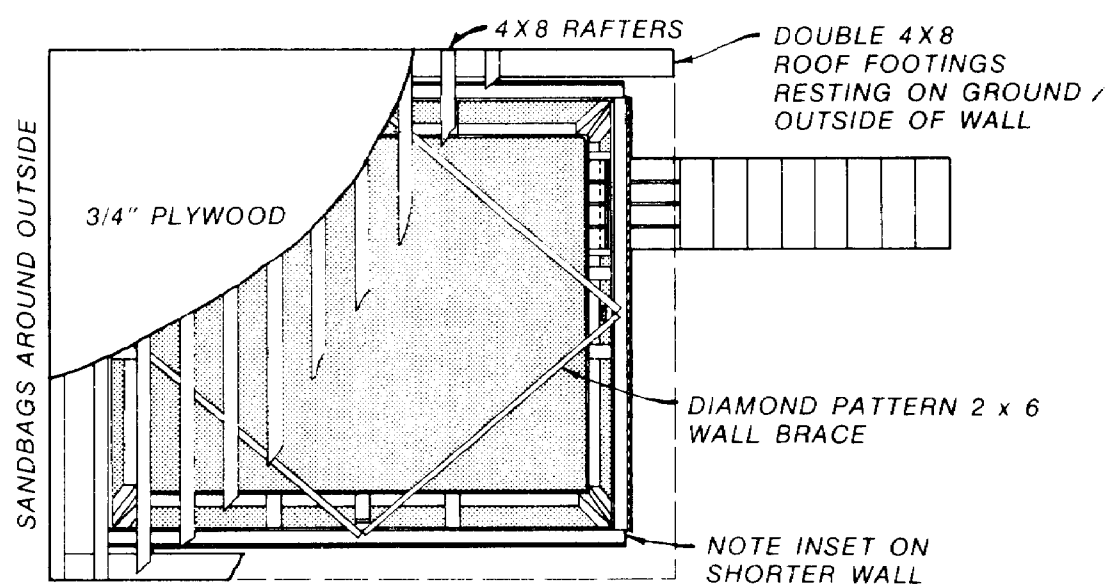
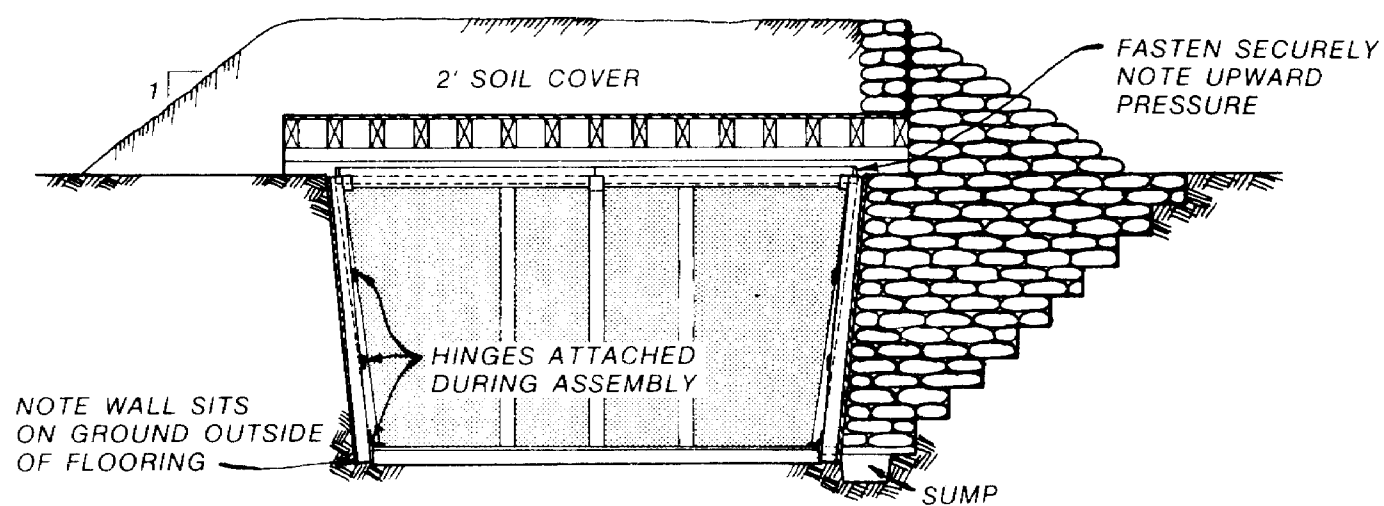
METAL CULVERT SHELTER



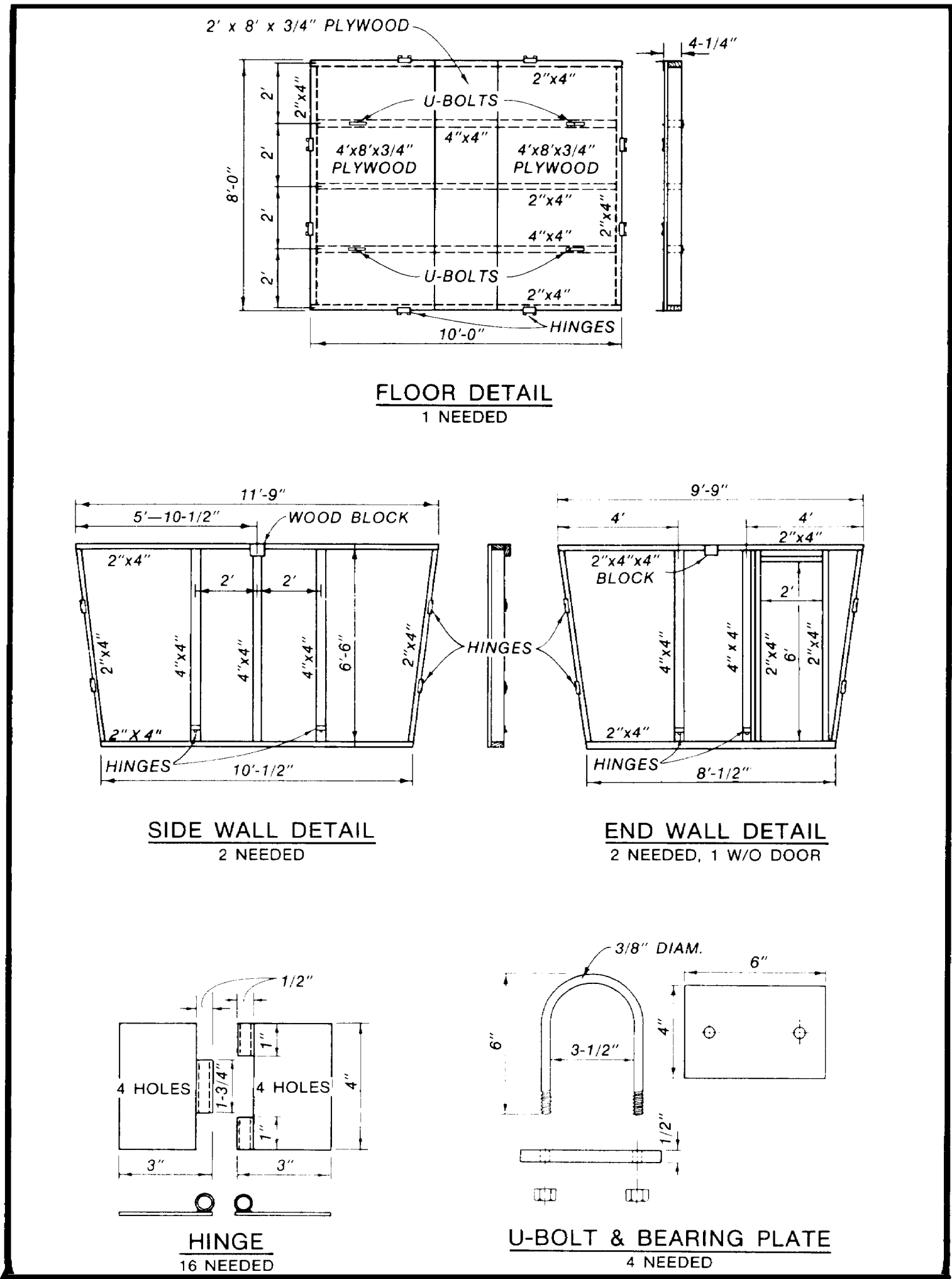
AIRTRANSPORTABLE ASSAULT SHELTER (sheet 1 of 3)



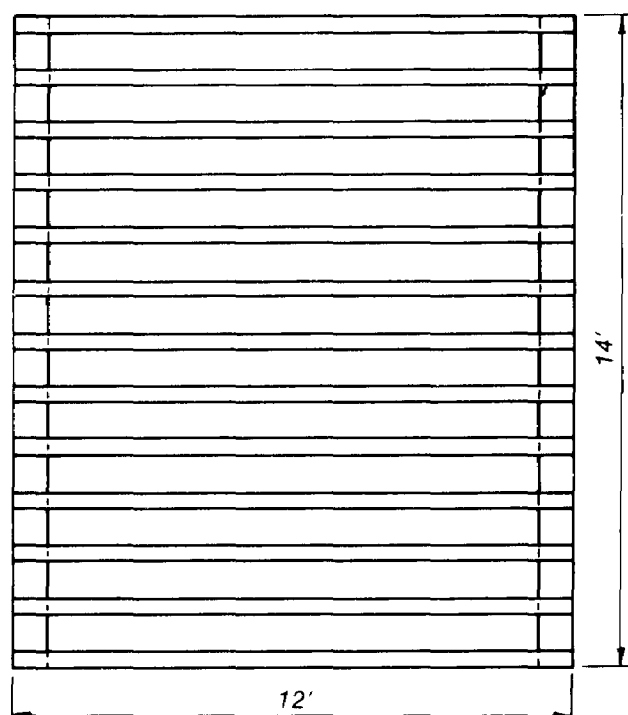
WATERPROOFING MEMBRANE

PICTORIALPLANSECTION

AIRTRANSPORTABLE ASSAULT SHELTER (sheet 2 of 3)

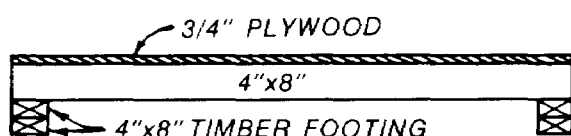


AIRTRANSPORTABLE ASSAULT SHELTER (sheet 3 of 3)



BILL OF MATERIALS (WALLS AND FLOOR)

ITEM	UNITS	QUANTITY
4'x8'x3/4" PLYWOOD	EA	14
4"x4"x8'	EA	10
4"x4"x10'	EA	2
2"x4"x12'	EA	4
2"x4"x10'	EA	9
2"x4"x8'	EA	10
2"x6"x10'	EA	4
TRIM (METAL EDGING)	FT	190
OPTIONAL BOLTS (FOR HINGES)	EA	128
WOOD SCREWS (OR #8 NAILS)	LB	5
PAINT	GAL	1
HINGES	EA	16
U-BOLTS W/ BEARING PLATES	EA	4



ROOF DETAIL

BILL OF MATERIALS (ROOF)

ITEM	UNIT	QUANTITY
4"x8"x12'	EA	13
4"x8"x14'	EA	4
4'x8'x3/4" PLYWOOD	EA	6

NOTES:

(1) Abut longer side walls against shorter end walls because the longer walls must sustain the greatest load. The shorter walls then act as a support. Install hinges during assembly.

(2) Provide wall bracing (2" x 6") at the top of the shelter. Brace from the center of each wall to the center of each adjacent wall (diamond pattern).

(3) Attach a sheet of plastic or other thin waterproof covering around the outside before backfilling to minimize friction between earth and the walls and increase moisture resistance.

(4) Make the shelter no larger than necessary. It should be no more than 6-1/2 feet high and the floor area should be less than 100 ft² unless special effort is made to provide adequate structural members in addition to those specified.

(5) Backfilling should be accomplished by hand labor, maintaining a uniform load around the perimeter as backfilling progresses.

(6) Make the bottom of the excavation 2 feet longer and 2 feet wider than the length and width of the structure floor to increase working room during erection and provide adequate clearance for the walls.

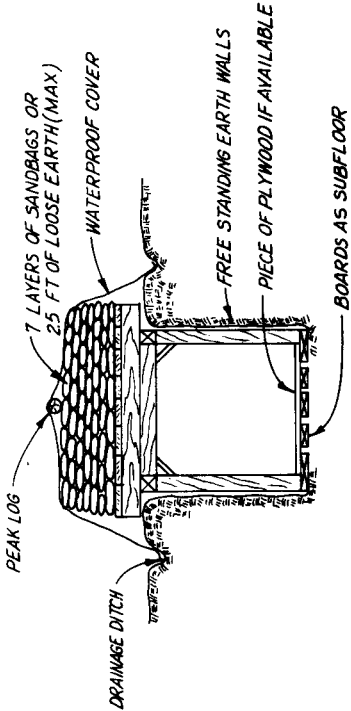
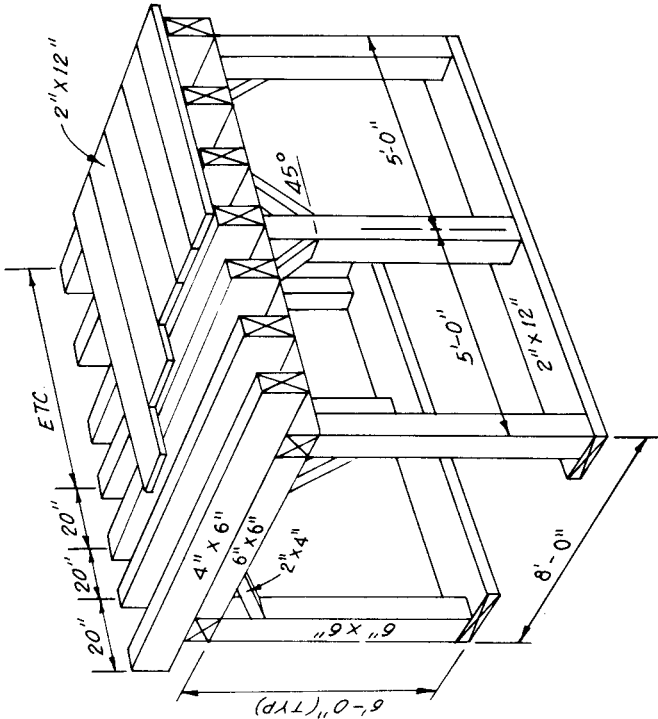
(7) Use explosives as extensively as practical during excavation to minimize required hand digging.

(8) To complete the structure provide a suitable entryway. Drainage ditches should be provided around the shelter to carry away runoff, and a waterproof cover placed over the overhead cover to prevent saturation of the soil material and eliminate seepage into the interior.

(9) Prior to lifting the structure from the installed position, remove some of the backfill with hand tools to reduce effects of wall friction.

TIMBER POST BURIED SHELTER

BILL OF MATERIALS			
NO.	ITEM	UNIT	QUANTITY
1	2"x4"x4'	EA	10
2	4"x6"x10'	EA	7
3	6"x6"x6'	EA	6
4	6"x6"x10'	EA	2
5	6"x6"x7'	EA	2
6	40d NAILS	LB	25
7	16d NAILS	LB	25

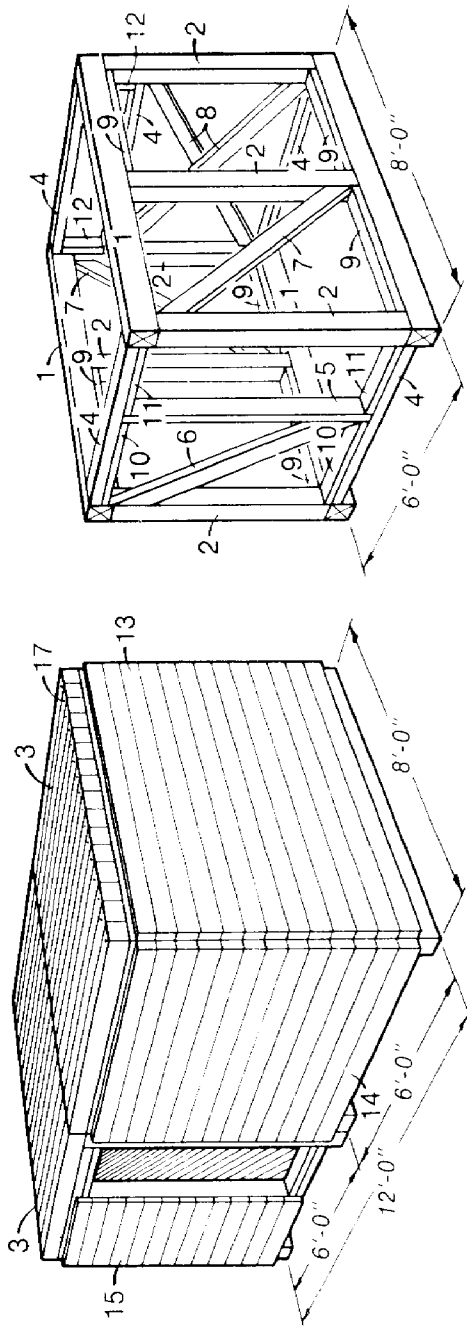


MODULAR TIMBER FRAME SHELTER

BILL OF MATERIALS			
NO	ITEM	UNIT	QUANTITY
1	CAP OR SILL 6x8x8'-0"	EA	4
2	POST 6x6x 5'-10"	EA	6
3	STRINGER* 6x6x6'-0"	EA	16
4	SPREADER 3x6x5'-0"	EA	5
5	POST, DOOR 3x6x6'-3"	EA	1
6	BRACE** 3x6x 7'-0"	EA	1
7	BRACE** 3x6x 6'-10"	EA	2
8	BRACE** 3x6x 8'-0"	EA	2
9	SPREADER 2x6x3'-3"	EA	6
10	SPREADER 2x6x2'-9"	EA	2
11	SPREADER 2x6x2'-0"	EA	2
12	SLAB 2x6x 1'-0"	EA	2
13	SIDING 3xRWx8'-0"	SQ FT	92
14	SIDING 3xRWx6'-0"	SQ FT	39
15	SIDING 3xRWx3'-6"	SQ FT	23
16	ROLL ROOF- ING (100 SQ FT ROLL)	SQ FT	600
17	DRIFTPIN (1/2"x14")	EA	44
18	NAILS (60d)	LB	32

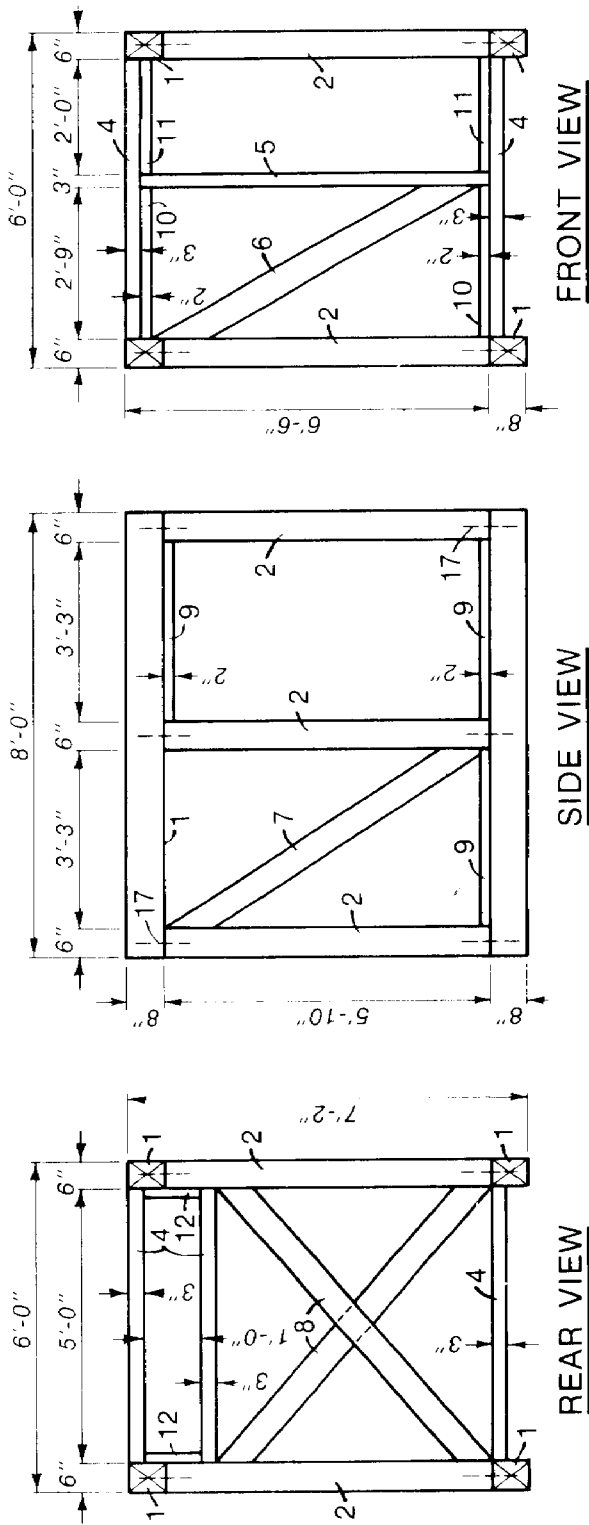
* LAMINATED WOOD ROOF MAY BE SUBSTITUTED IF DESIRED. WHEN CONNECTING TWO MODULES STRINGERS MAY BE 6 x 6 x 12'-0" (16 REQ'D).

** ALLOWANCE FOR DOUBLE OUT ENDS OF BRACES IS INCLUDED IN OVERALL LENGTH AS SHOWN.



TYPICAL CONNECTION OF TWO MODULES

STANDARD 6' x 8' MODULE FRAME



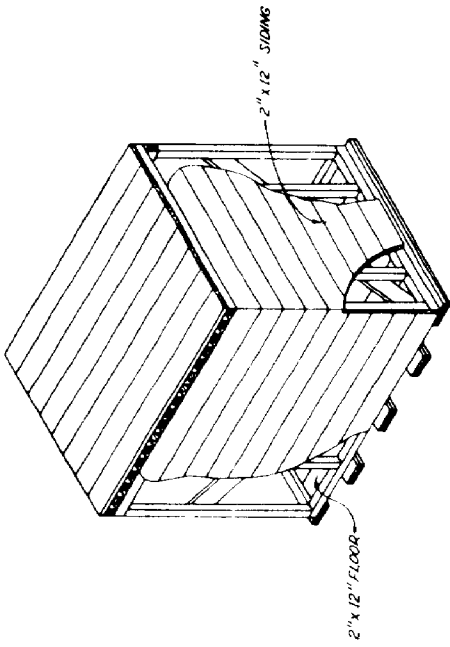
FRONT VIEW

SIDE VIEW

REAR VIEW

MODULE DETAILS

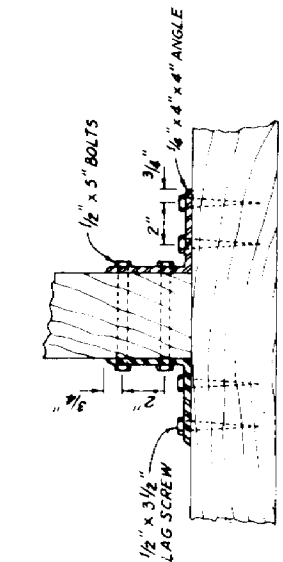
TIMBER FRAME BURIED SHELTER



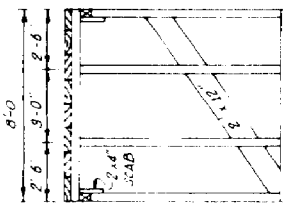
ISOMETRIC

ITEM	UNIT	QUANTITY	REMARKS
1. 2" x 4" x 1'	EA	9	FOR SCABBING
2. 2" x 12" x 10'	EA	57	
3. 4" x 4" x 8'	EA	30	
4. 4" x 4" x 10'	EA	2	
5. 4" x 8" x 10'	EA	2	
6. NAILS	LB	15 LB EACH OF 8d, 16d, 20d	
7. ROOF PAPER	SQ FT	80	
8. 4" x 4" x 1/2" L 3 1/2" LG	EA	44	
9. 4" x 4" x 1/2" PLATE 3 1/2" LG	EA	8	
10. 1/2" BOLTS 5" LG	EA	52	
11. 1/8" LAG SCREWS 3 1/2" LG	EA	52	

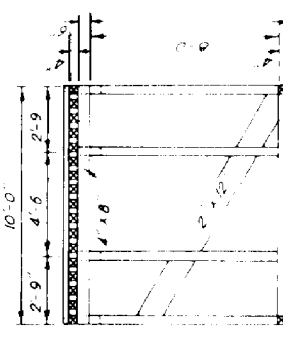
NOTE: MODULAR UNITS CAN BE READILY JOINED FOR ENLARGED SHELTER



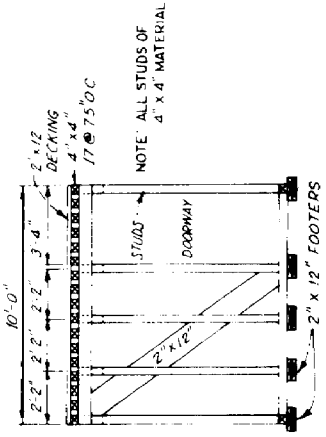
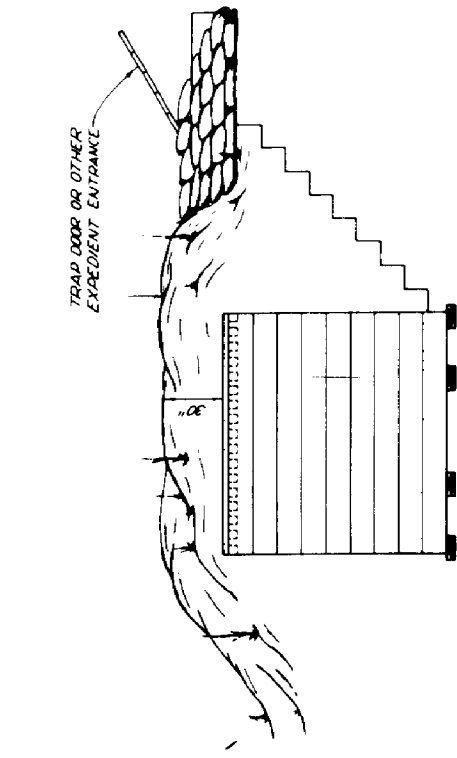
TYPICAL POST CONNECTING DETAIL
USE ANGLES AT TOP AND BOTTOM AS SHOWN.
FOR CORNER POSTS REPLACE ONE ANGLE WITH ONE PLATE.



SIDE FRAMING ELEVATION

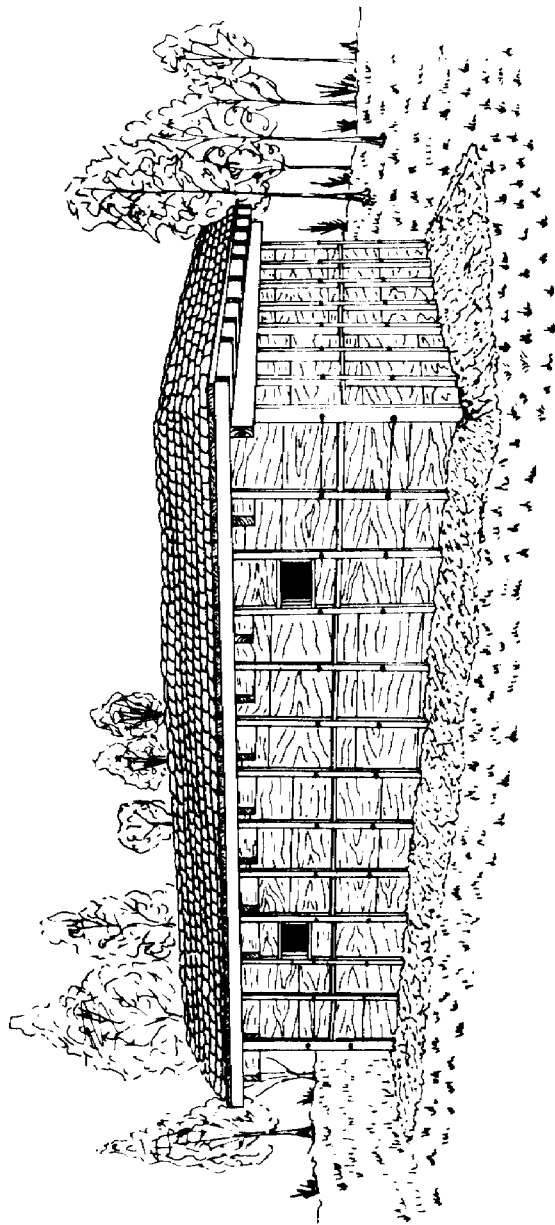


FRONT FRAMING ELEVATION

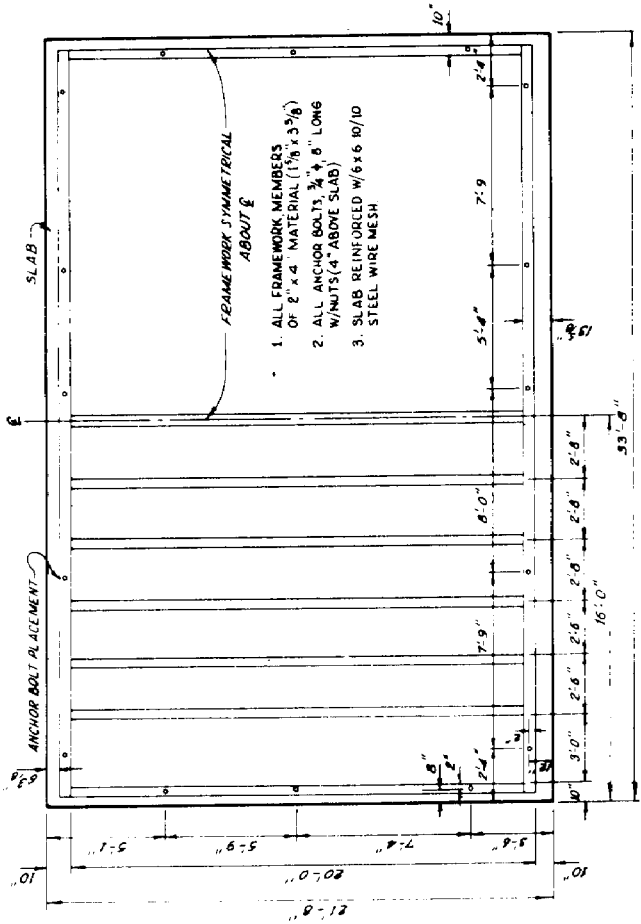


REAR FRAMING ELEVATION

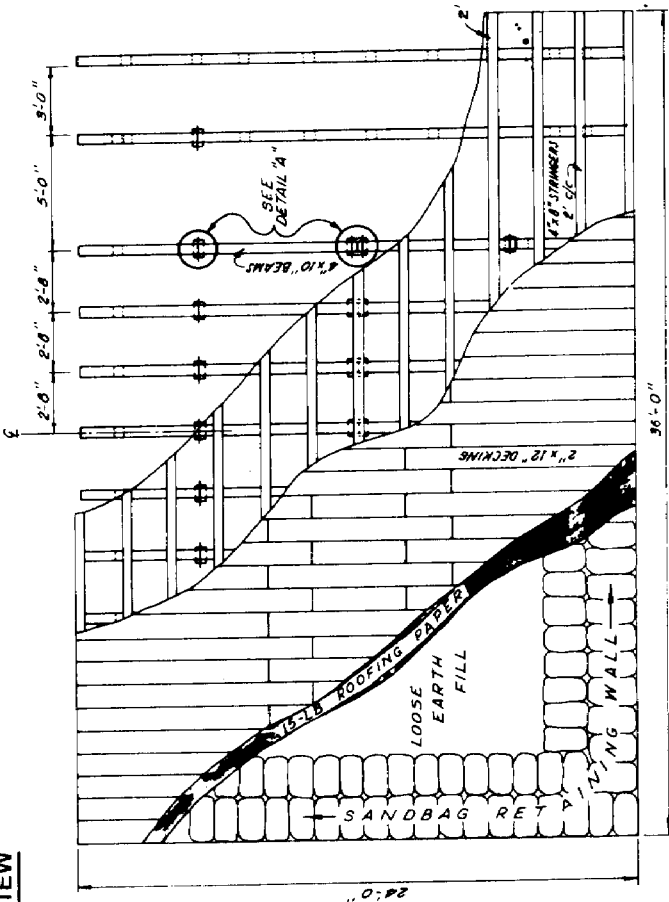
ABOVEGROUND CAVITY WALL SHELTER (sheet 1 of 2)



PICTORIAL VIEW

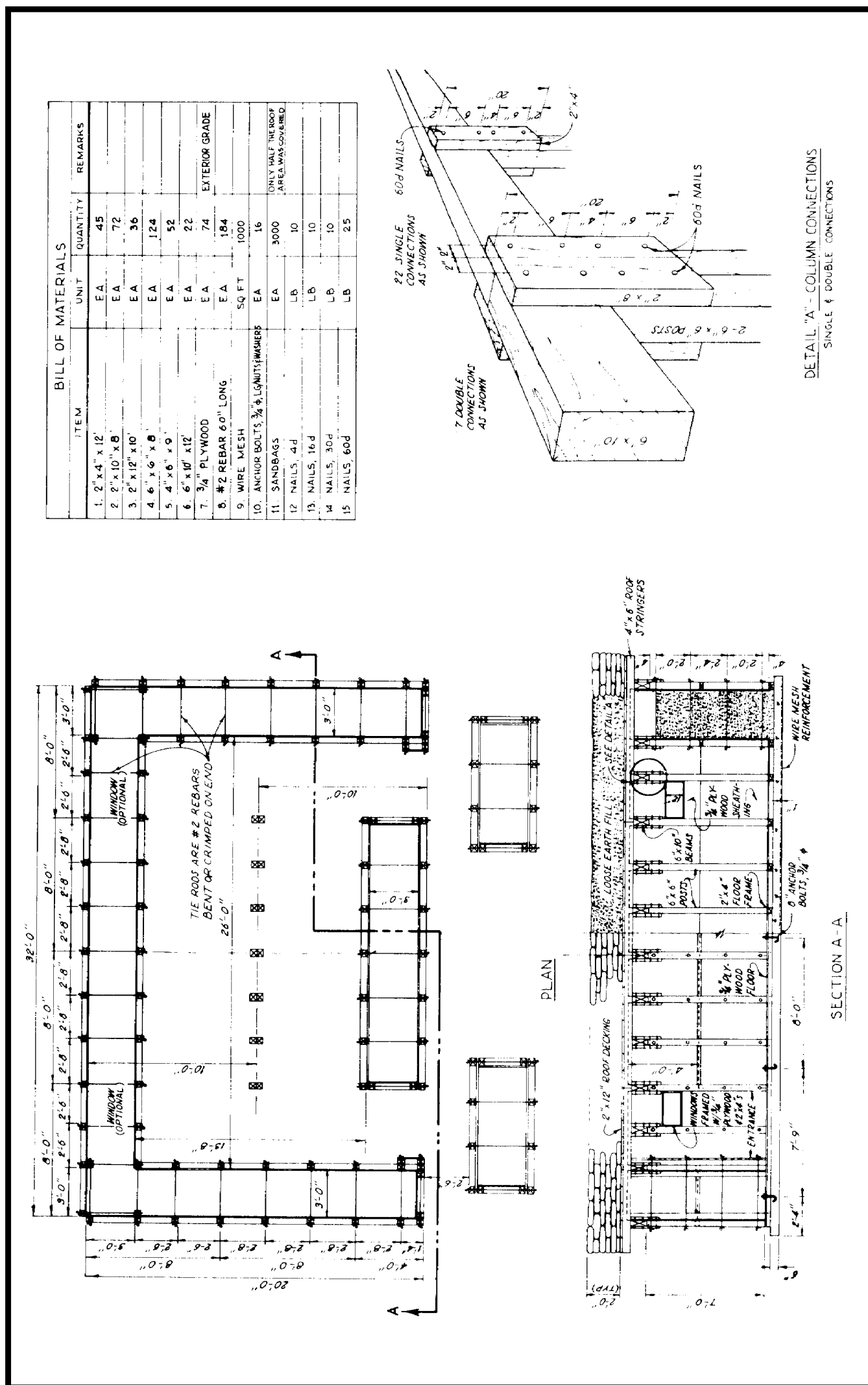


FLOOR PLAN

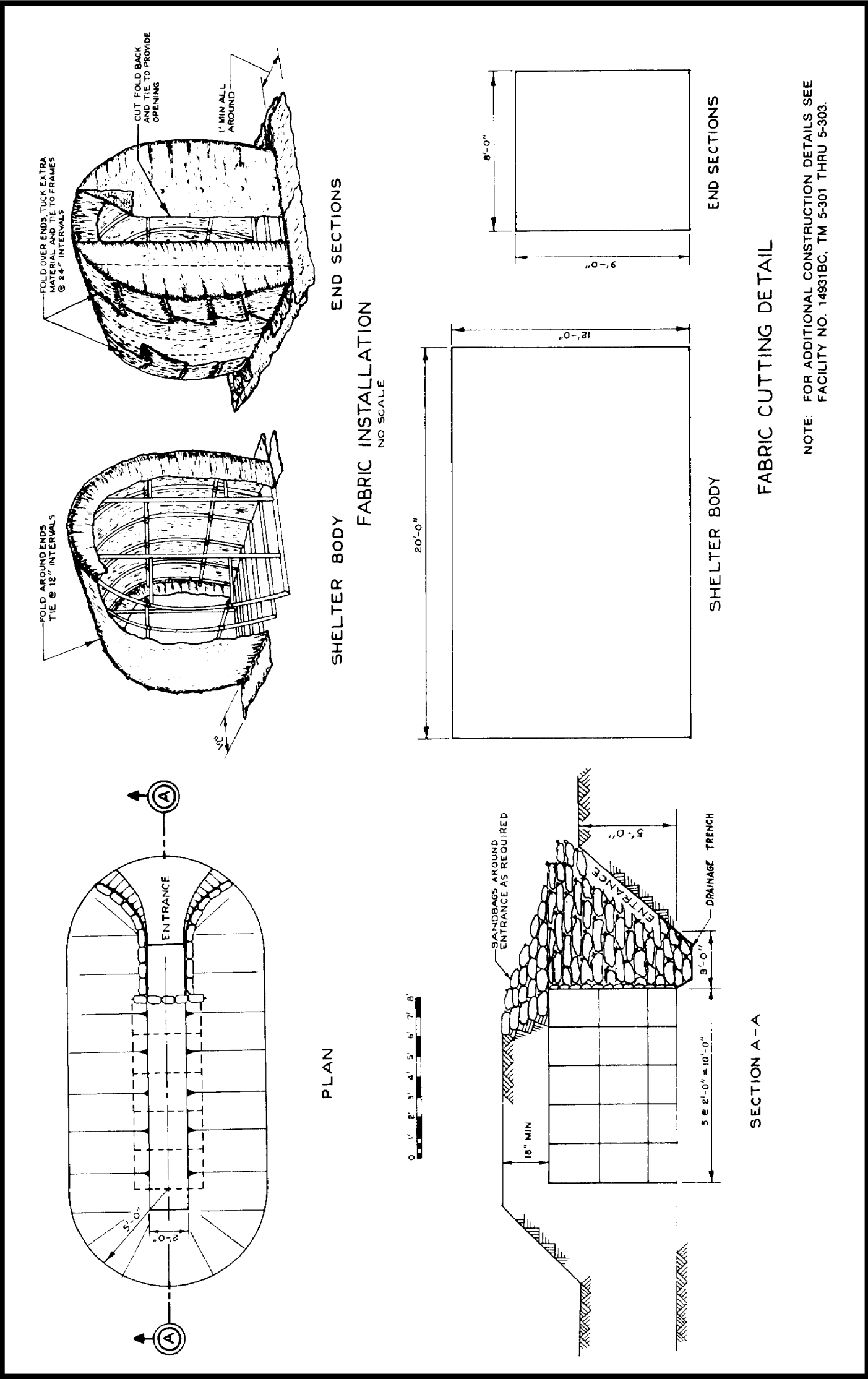


ROOF PLAN

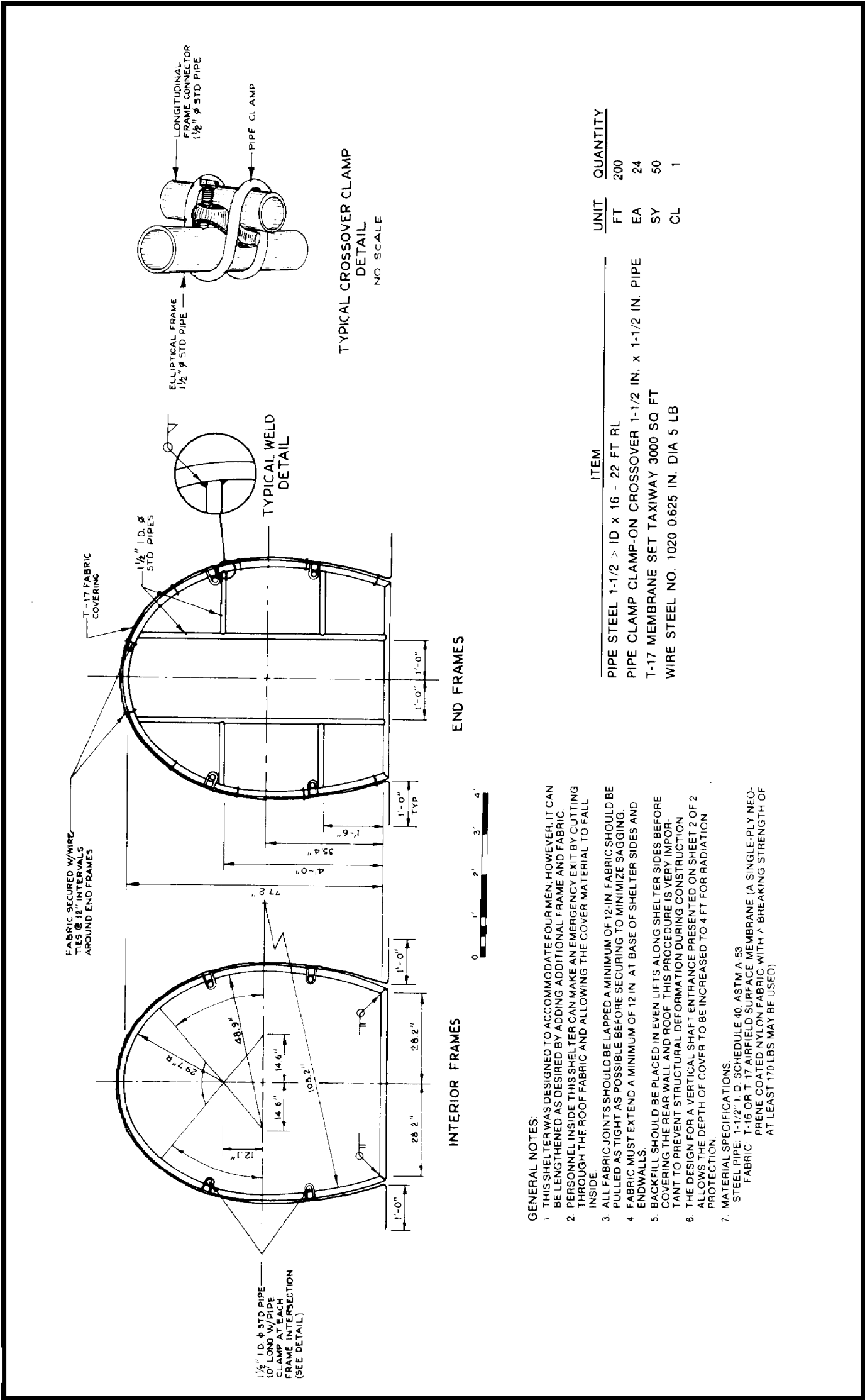
ABOVEGROUND CAVITY WALL SHELTER (sheet 2 of 2)



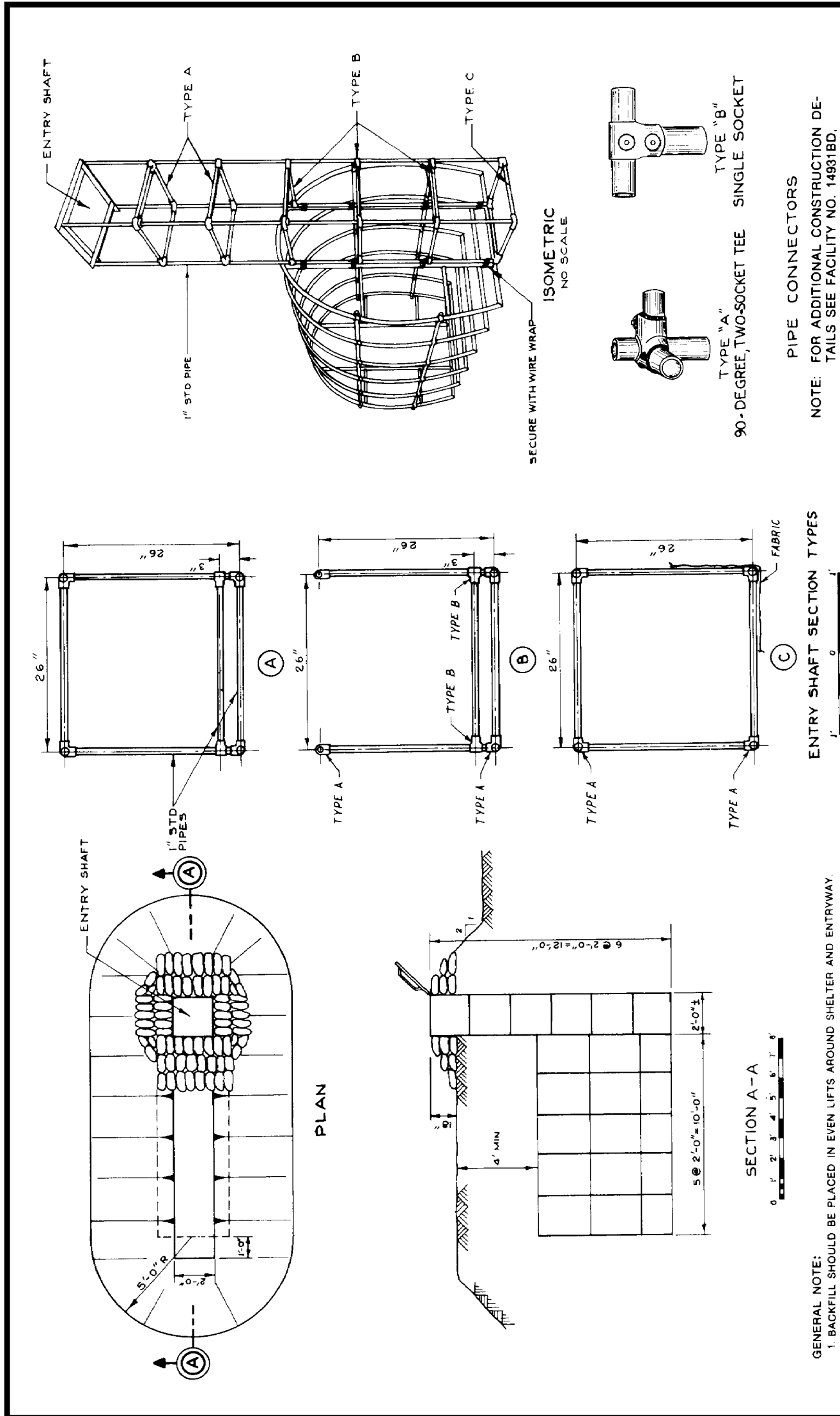
STEEL FRAME/FABRIC-COVERED SHELTER (sheet 1 of 2)



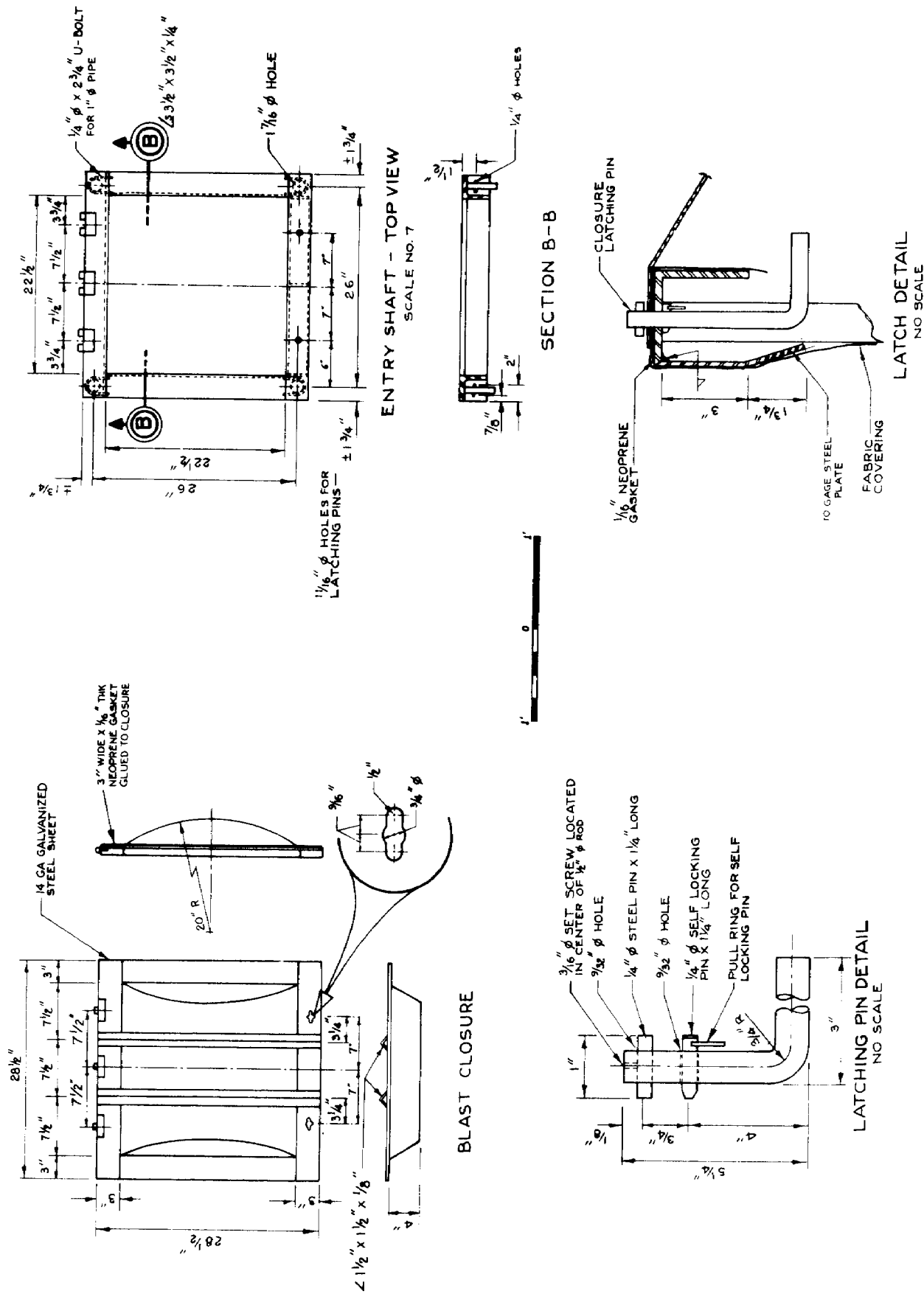
STEEL FRAME/FABRIC-COVERED SHELTER (sheet 2 of 2)



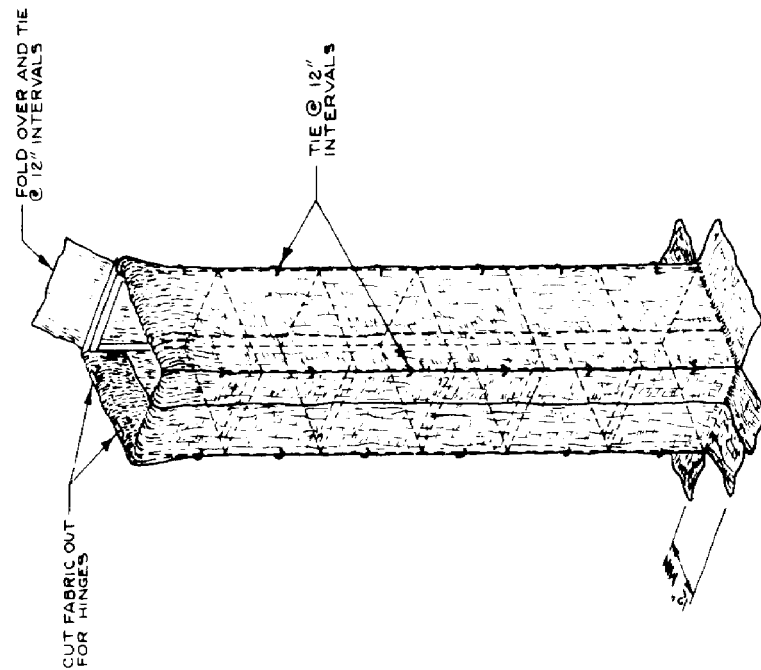
HARDENED FRAME/FABRIC SHELTER (sheet 1 of 3)



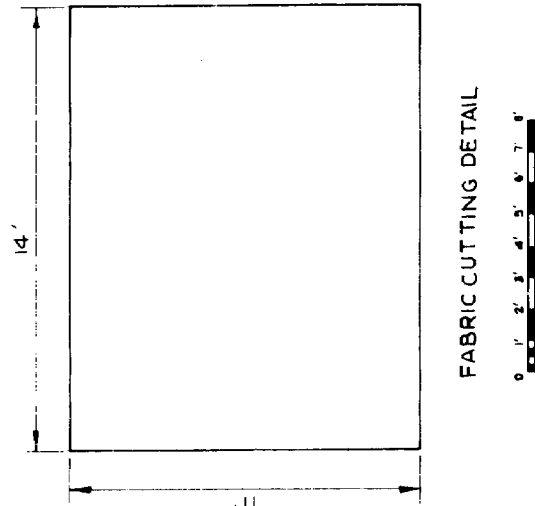
HARDENED FRAME/FABRIC SHELTER (sheet 2 of 3)



HARDENED FRAME/FABRIC SHELTER (sheet 3 of 3)

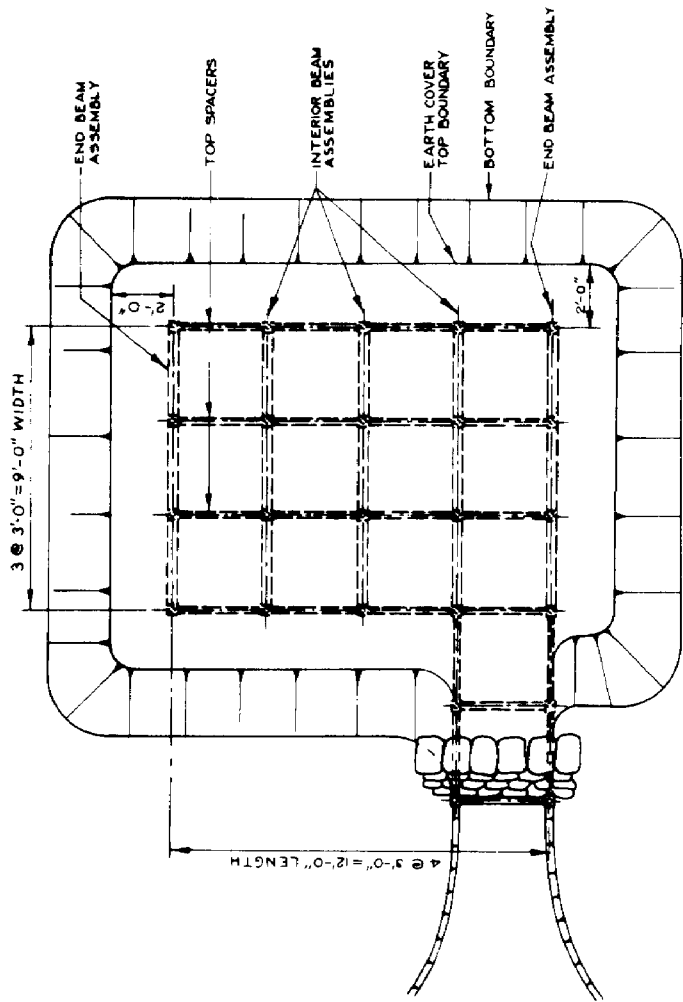


FABRIC COVERED
ENTRY SHAFT
NO SCALE

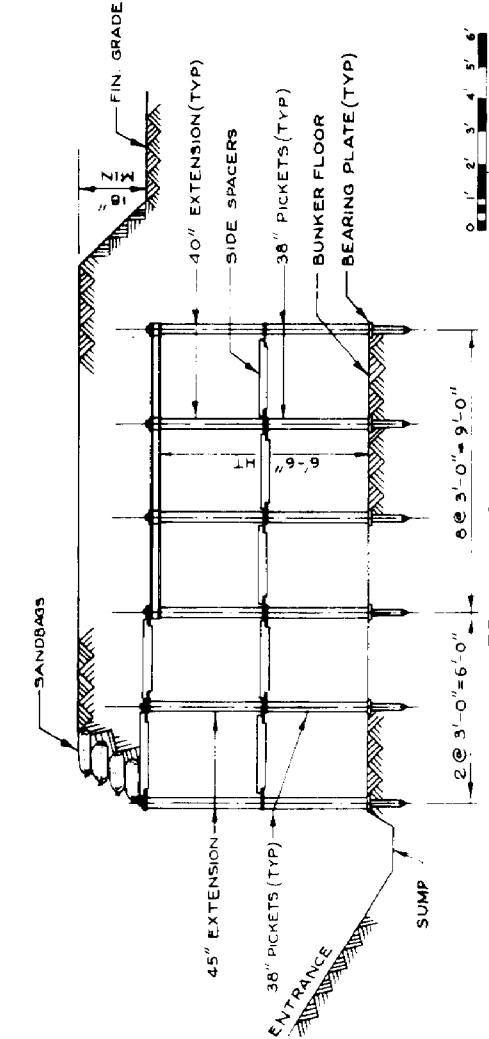


ITEM	UNIT	QUANTITY
PIPE STEEL 1 IN. x 16 - 22 FT LG	FT	120
PIPE CLAMP SINGLE-SOCKET TEE 1 IN. PIPE	EA	12
PIPE CLAMP TWO-SOCKET TEE 90° 1 IN. PIPE	EA	18
HINGE BUTT STEEL 3-1/2 IN. x 1-3/4 IN.	EA	3
T-17 MEMBRANE SET TAXIWAY 3000 SQ FT	SY	20
STEEL SHEET CARBON 0.1382 THICK GALV	SF	2
METAL SHEET 0.0781 IN. THICK UNCOATED STEEL	SF	16
STEEL ANGLE 1-1/2 x 1-1/2 x 1/8 IN. LEG THICK	FT	5
STEEL ANGLE 3-1/2 x 3-1/2 x 1/4 IN. LEG THICK	FT	10

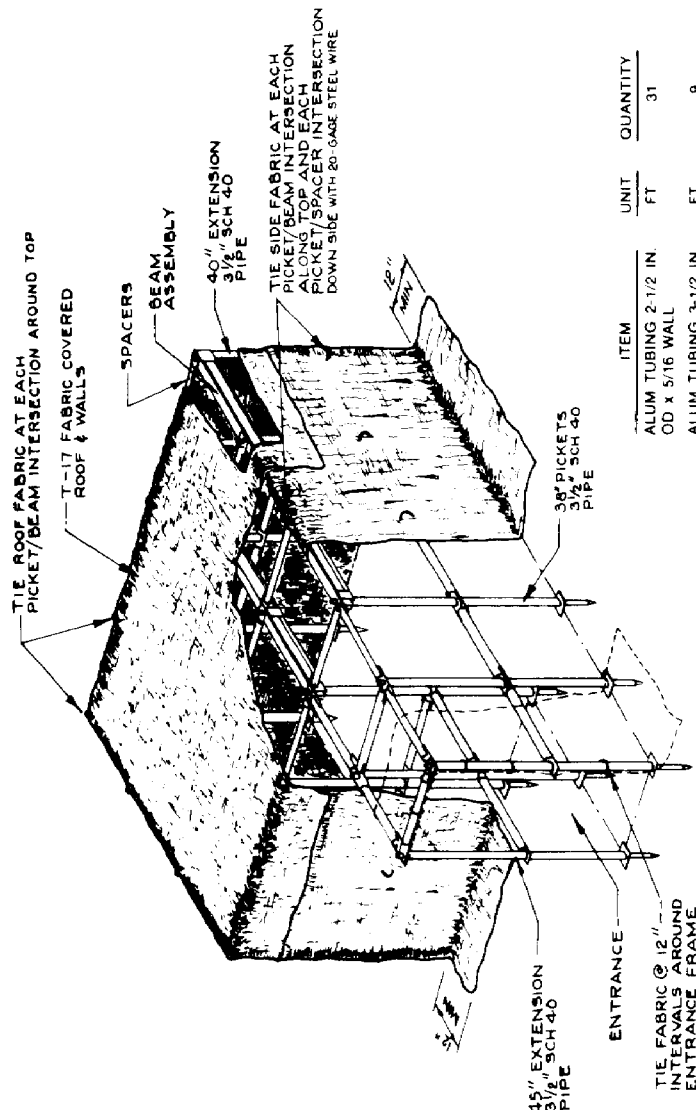
RECTANGULAR FABRIC/FRAME SHELTER (sheet 1 of 2)



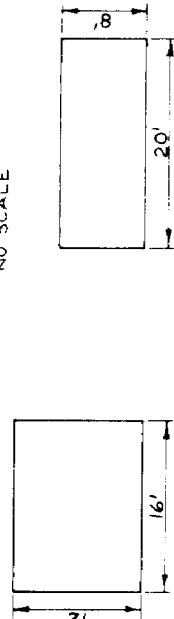
PLAN
SCALE NO. 3



FRONT VIEW
SCALE NO. 3

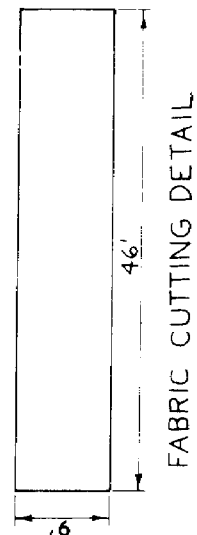


ISOMETRIC VIEW
NO SCALE



SHELTER ROOF
SCALE NO. 7

ENTRYWAY ROOF
AND WALLS
SCALE NO. 7



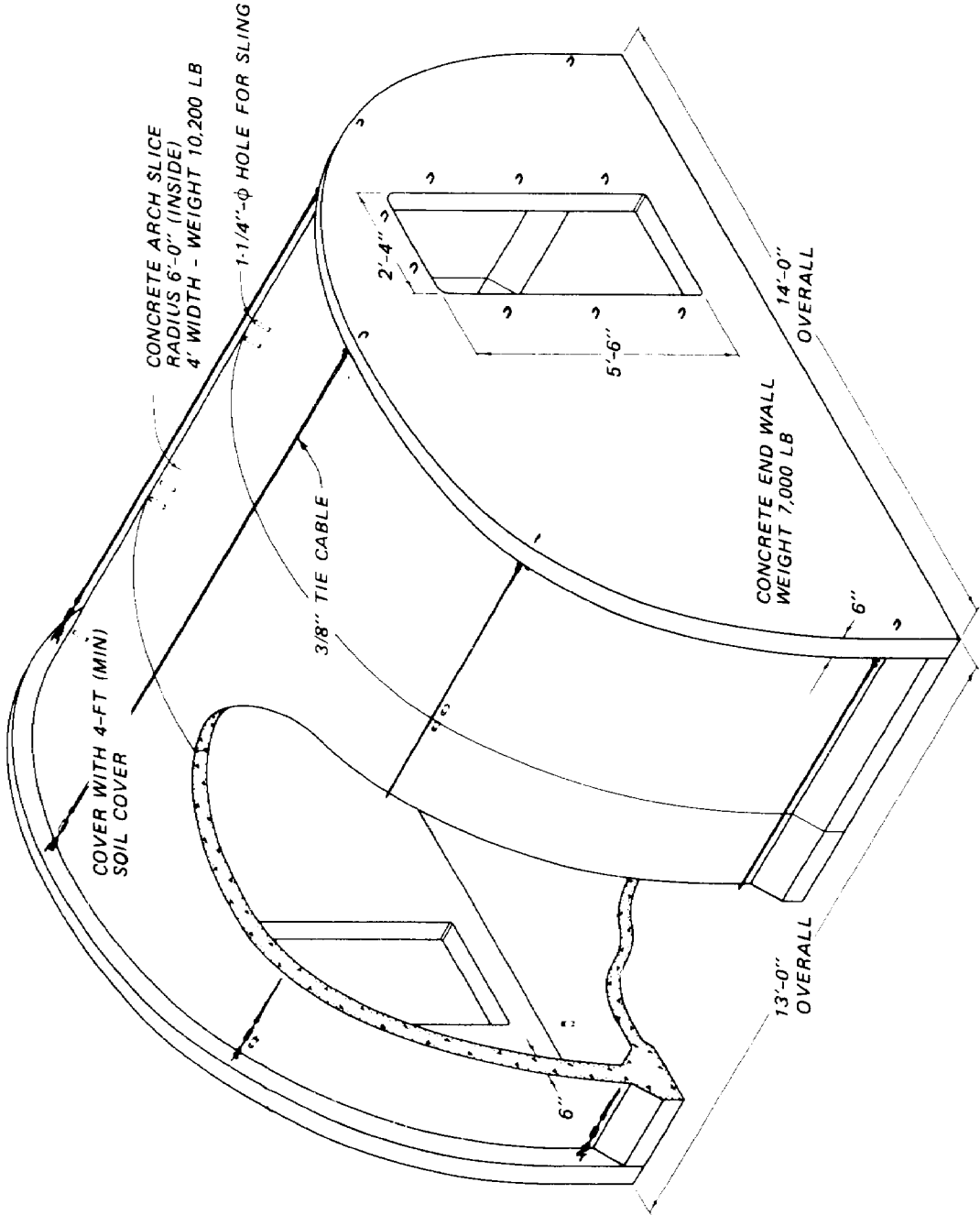
FABRIC CUTTING DETAIL

ITEM	UNIT	QUANTITY
ALUM TUBING 2-1/2 IN. OD x 5/16 WALL	FT	31
ALUM TUBING 3-1/2 IN. OD x 3/8 WALL	FT	9
ALUM PIPE 2-1/2 IN. SCHEDULE 40 6061T6	FT	98
ALUM PIPE 3 IN. SCHEDULE 40 6061T6	FT	4
ALUM PIPE 3-1/2 IN. SCHEDULE 40 6061T6	FT	119
T-17 MEMBRANE SET TAXIWAY 3000 SQ FT	SY	100
WIRE STEEL NO. 1020 0.0825 IN. DIA 5 LB	CL	1
METAL BAR ALUM ALLOY 6061 2.5 IN. ROUND	FT	6
METAL BAR ALUM ALLOY 6061 1/4 IN. x 6 IN.	FT	18
METAL BAR ALUM ALLOY 6061 3/4 IN. x 6 IN.	FT	56
METAL BAR ALUM ALLOY 6061 3/8 IN. x 6 IN.	FT	9
ALUM H-BEAM 4 IN. x 4 IN. STD 4.76 LB/FT	FT	48

NOTE: FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY NO. 14931BF, TM 5-301 THRU 5-303.



CONCRETE ARCH SHELTER (sheet 1 of 3)

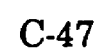


GENERAL NOTES

1. MATERIAL SPECIFICATIONS:
CONCRETE: PORTLAND CEMENT, SAND & COARSE AGGREGATE 3/4" MAX, MIXED TO PROPORTIONS FOR 3000 PSI COMPRESSIVE STRENGTH IN 28 DAYS.
CONCRETE REINFORCING STEEL: INTERMEDIATE GRADE 40,000 PSI TENSILE STRENGTH.
MULTI-PLATE PIPE ARCH: 8-GAGE CORRUGATED-STEEL, 6" x 2" CORRUGATIONS, GALVANIZED.
MISCELLANEOUS FASTENERS: GRADE AS AVAILABLE.
DESIGN LOADING: 8' EARTH COVER AT CROWN.
GROUNDWATER SEEPAGE: ALL EXTERIOR SURFACES OF SHELTER & ENTRANCEWAY MUST BE COVERED WITH WATERPROOFING MEMBRANE TO PREVENT GROUND WATER SEEPAGE.
FLOOR: CORRUGATED-STEEL FLOOR PROVIDED.
OCCUPANCY: 12' x 12' BASIC SHELTER DESIGNED FOR 10 MEN ASSUMING ONE SLEEPING BUNK PER MAN.
EQUIPMENT PROVIDED: BASIC SHELTER PROVIDES ONLY STRUCTURAL COMPONENTS AND ASSEMBLIES. ALL EQUIPMENT MUST BE PROVIDED SEPARATELY.
EMERGENCY EXIT: USE ONE OF DOOR OPENINGS AS EMERGENCY EXIT.
BUNK INSTALLATION: TO BE SUSPENDED FROM ARCH SECTION BY ANCHOR HOOKS.
TRANSPORTABILITY: ARCH SECTION 4300 LB, ENDWALL 7900 LB.
FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY NO. 040101, TM 5-301 THRU 5-303.

ERECTION PROCEDURES

1. LEVEL SITE.
2. PLACE WATERPROOFING MEMBRANE ON GROUND BELOW SHELTER.
3. PLACE ARCH SECTION.
4. PLACE REAR END WALL AND BRACE TEMPORARILY.
5. PLACE AND TEMPORARILY BRACE FRONT END WALL.
6. CONNECT, TIGHTEN, TIE CABLES FROM END WALL TO END WALL (SEE CABLE DETAIL SHEET 2).
7. PLACE AND CONNECT ENTRANCEWAY TO SHELTER (ENTRANCEWAY NOT INCLUDED IN THIS SET OF DRAWINGS).
8. PLACE WATERPROOFING MEMBRANE OVER SHELTER AND ENTRANCEWAY.
9. BACKFILL SHELTER TO DESIRED EARTH COVER BEING CAREFUL TO RAISE AND PACK EARTH FILL IN UNIFORM LIFTS OF EQUAL DEPTH ON OPPOSITE SIDES OF ARCH SECTIONS AND END WALL SECTIONS.



The image contains four technical drawings illustrating lifting details for a structure, likely a dome or vaulted ceiling.

- TOP VIEW:** A plan view of a circular arch. It shows a central vertical support labeled "4-6 STEEL STRONGBACK". Two lifting points are indicated on the arch's edge, labeled "1/2 WIRE ROPE SLING". A note specifies: "1 1/2 IN. NET W/ 6 IN. DIAM. WASHER ON EACH END SLIDING AGAINST CONCRETE".
- SIDE VIEW:** A side elevation of the arch. It shows the "4-6 STEEL STRONGBACK" as a horizontal beam. Two lifting points are shown, labeled "LIFTING EVENTS W/ 1/2 WIRE ROPE SLING".
- PLAN:** A plan view of a rectangular end wall. It shows a central vertical axis labeled "CENTER OF GRAVITY". Two lifting points are indicated on the wall's edge, labeled "1/2 WIRE ROPE SLING HOOKED TO ANCHOR BARS AT JOINT". Dimensions shown are "6'-8 1/2\"
- SIDE VIEW:** A side elevation of the end wall. It shows the wall's profile and the lifting points. A note specifies: "1/2 WIRE ROPE SLING".

ARCH SLICE (HORIZONTAL) LIFTING DETAIL

END WALL LIFTING DETAIL

ELEVATION @ HAUNCH

SIDE VIEW

ARCH SLICE (VERTICAL) LIFTING DETAIL

SLING DETAILS

PLACEMENT CROSS-SECTION

BAR SCHEDULE

ONE END WALL (2 REQD PER SHELTER)

BAR	QUANTITY	SIZE	LENGTH	TYPE	LINEAL FT	REMARKS
W1	2	#4	3'-6"	B	14'	
W2	2	#4	4'-4"	B	16	
W3	2	#4	5'-5"	B	22	
W4	2	#4	6'-5"	B	25	
W5	2	#4	6'-8"	B	27	
W6	2	#4	7'-2"	B	29	
W7	2	#4	7'-6"	B	30	
W8	2	#4	7'-9"	B	31	
W9	1	#4	8'-0"	B	16	
W10	1	#4	8'-1"	B	17	
W11	1	#4	8'-4"	B	17	
W12	1	#4	8'-6"	B	17	
W13	1	#4	8'-8"	B	18	
W14	1	#4	8'-9"	B	18	
W15	5	#4	8'-10"	B	09	
W16	2	#4	2'-0"	B	8	
W17	2	#4	1'-11"	D	4	
W18	1	#4	1'-8"	D	4	
W19	1	#4	1'-6"	D	3	
W20	1	#4	1'-4"	D	3	
W21	4	#4	8'-0"	D	32	
W22	4	#4	9'-6"	D	38	
W23	2	#4	1'-4"	A	5	
W24	2	#4	3'-1"	A	7	
W25	2	#4	3'-4"	A	7	
W26	2	#4	7'-0"	A	14	
W27	2	#4	7'-1"	A	14	
W28	2	#4	7'-10"	A	16	
W29	6	#4	15'-10"	A	05	
W30	3	#4	1'-0"	A	6	
W31	10	#4	5'-0"	A	50	
W32	14	#4	5'-1/2"	A	7	
W33	8	#4	1'-4"	G	19	

36'-20 BARS

TYPE A

TYPE B

TYPE C

TYPE D

TYPE E

TYPE F

TYPE G (A-B BAR)

TYPE H (ANCHOR BAR)

TYPE J

TYPE K (STANDOFF BAR FOR CURVED SECTION OF ARCH)

TYPE L (STANDOFF BAR FOR FLOOR & MAIN)

TYPE M (STANDOFF BAR FOR FLOOR & MAIN)

ALL DIMENSIONS ARE OUT TO OUT FOR ALL TYPE B BARS - FOR LINEAL FT

TYPE R (STANDOFF BAR FOR DOUBLE DIMENSION SHOWN UNDER LENGTH IN SCHEDULE)

MARK	QUANTITY	SIZE	LENGTH	TYPE	LINEAL FT	REMARKS
A1	3	#4	20'-0"	A	160	
A2	32	#4	3'-0"	A	96	
A3	29	#4	4'-0"	A	116	
A4	8	#4	15'-0"	A	112	
A5	15	#4	1'-1"	K	10	
A6	16	#4	5'-0"	F	90	
A7	16	#4	5'-0"	J	90	
A8	16	#4	5'-6"	C	98	
A9	12	#4	10'-6"	L	8	

107

AD-20 BARS

107 20 BARS

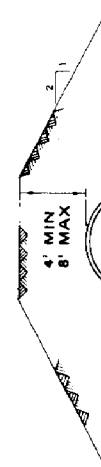
NOTE

1. REBARS MARKED W1 - W20 CAN BE REPLACED W/ #4 - 10" STRAIGHT REBAR & REBARS MARKED W3 - W28 CAN BE REPLACED W/ #6 - 13" 10" STRAIGHT REBAR. AFTER ASSEMBLING TOP & BOTTOM REBAR MATS CUT REBARS TO FIT ARCH CURVE & DOOR OPENING

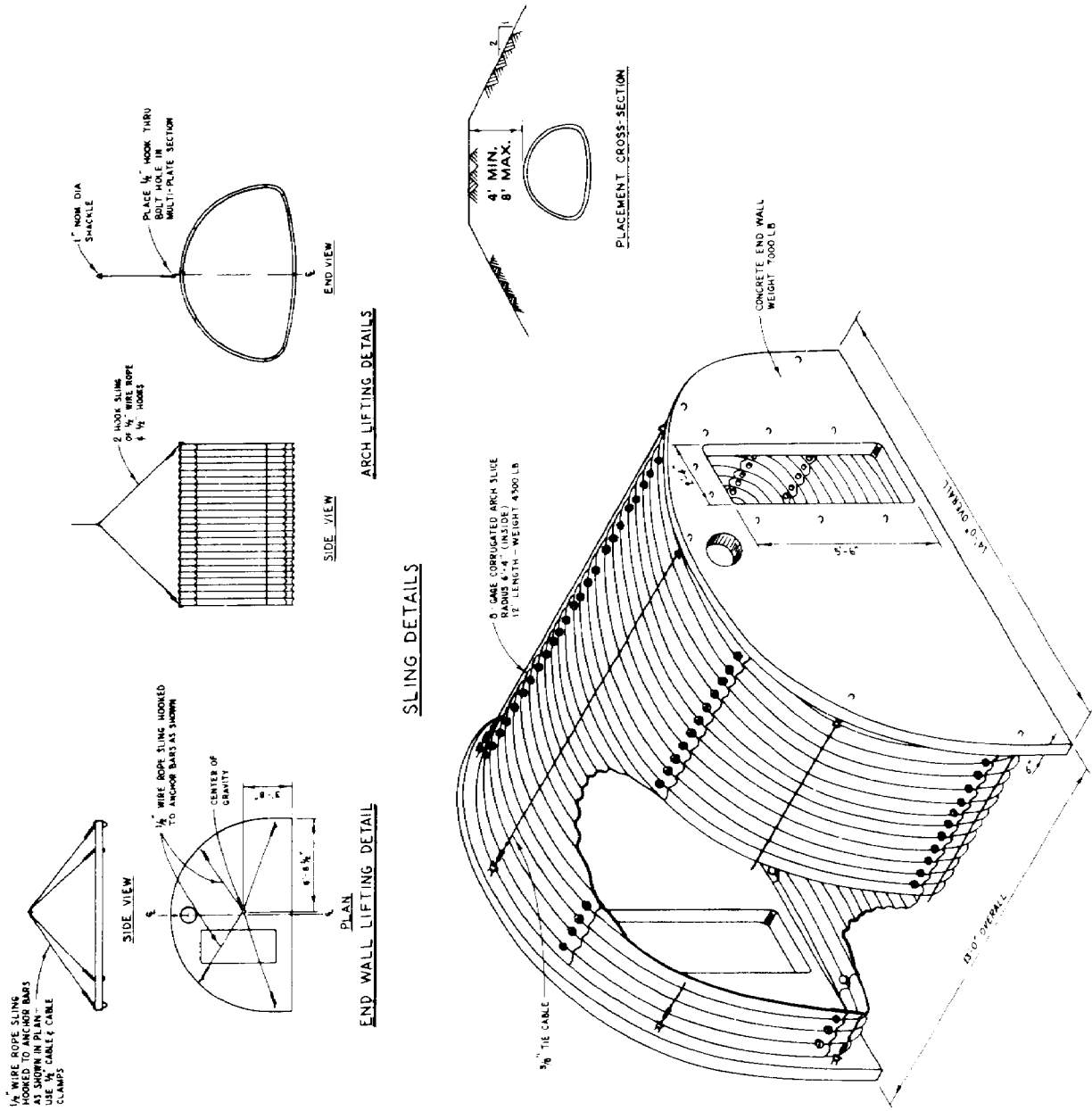
36-20 MAR 83

BILL OF MATERIALS FOR 12'x12' SHELTER (FORMS NOT INCLUDED)

CONCRETE	12 CY
CONCRETE REINFORCING STEEL #4	200' 20" BARS
1/4" x PIPE 6" LONG	4 EA
1/4" x PIPE 4" LONG	4 EA
1/4" x PIPE 2" LONG	4 EA
1/4" x PIPE 2" LONG	4 EA
CABLE ASSEMBLY (SEE CABLE DETAIL)	5 EA
REINFORCING STEEL TIE WIRE	
WATERPROOFING MEMBRANE	



METAL PIPE ARCH SHELTER (sheet 1 of 2)



GENERAL NOTES

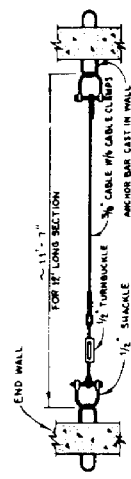
1. MATERIAL SPECIFICATIONS:
CONCRETE: PORTLAND CEMENT, SAND & COARSE AGGREGATE 3/4" MAX. MIXED TO PROPORTIONS FOR 3000 PSI COMPRESSIVE STRENGTH IN 28 DAYS.
CONCRETE REINFORCING STEEL: INTERMEDIATE GRADE 40,000 PSI TENSILE STRENGTH.
MULTI-PLATE PIPE ARCH: 8-GAGE CORRUGATED-STEEL, 6" x 2" CORRUGATIONS, GALVANIZED.
MISCELLANEOUS FASTENERS: GRADE AS AVAILABLE.
2. DESIGN LOADING: 8' EARTH COVER AT CROWN.
3. GROUNDWATER SEEPAGE: ALL EXTERIOR SURFACES OF SHELTER & ENTRANCEWAY MUST BE COVERED WITH WATERPROOFING MEMBRANE TO PREVENT GROUND WATER SEEPAGE.
4. FLOOR: CORRUGATED-STEEL FLOOR PROVIDED.
5. OCCUPANCY: 12' x 12' BASIC SHELTER DESIGNED FOR 10 MEN ASSUMING ONE SLEEPING BUNK PER MAN.
6. EQUIPMENT PROVIDED: BASIC SHELTER PROVIDES ONLY STRUCTURAL COMPONENTS AND ASSEMBLIES. ALL EQUIPMENT MUST BE PROVIDED SEPARATELY.
7. EMERGENCY EXIT: USE ONE OF DOOR OPENINGS AS EMERGENCY EXIT.
8. BUNK INSTALLATION: TO BE SUSPENDED FROM ARCH SECTION BY ANCHOR HOOKS.
9. TRANSPORTABILITY: ARCH SECTION 4300 LB, ENDWALL 7900 LB.
10. FOR ADDITIONAL CONSTRUCTION DETAILS SEE FACILITY NO. 040201, TM 5-301 THRU 5-303.

ERECTION PROCEDURES

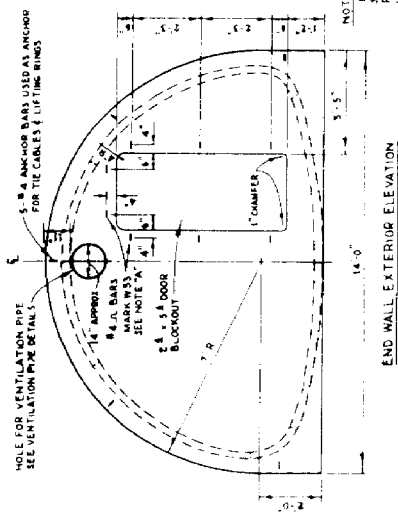
1. LEVEL SITE.
2. PLACE WATERPROOFING MEMBRANE ON GROUND BELOW SHELTER.
3. PLACE ARCH SECTION.
4. PLACE REAR END WALL AND BRACE TEMPORARILY.
5. PLACE AND TEMPORARILY BRACE FRONT END WALL.
6. CONNECT, TIGHTEN, TIE CABLES FROM END WALL TO END WALL (SEE CABLE DETAIL SHEET 2).
7. PLACE AND CONNECT ENTRANCEWAY TO SHELTER (ENTRANCEWAY NOT INCLUDED IN THIS SET OF DRAWINGS)
8. PLACE WATERPROOFING MEMBRANE OVER SHELTER AND ENTRANCEWAY.
9. BACKFILL SHELTER TO DESIRED EARTH COVER BEING CAREFUL TO RAISE AND PACK EARTH FILL IN UNIFORM LIFTS OF EQUAL DEPTH ON OPPOSITE SIDES OF ARCH SECTIONS AND END WALL SECTIONS.

ASSEMBLY ISOMETRIC
NOT TO SCALE

METAL PIPE ARCH SHELTER (sheet 2 of 2)

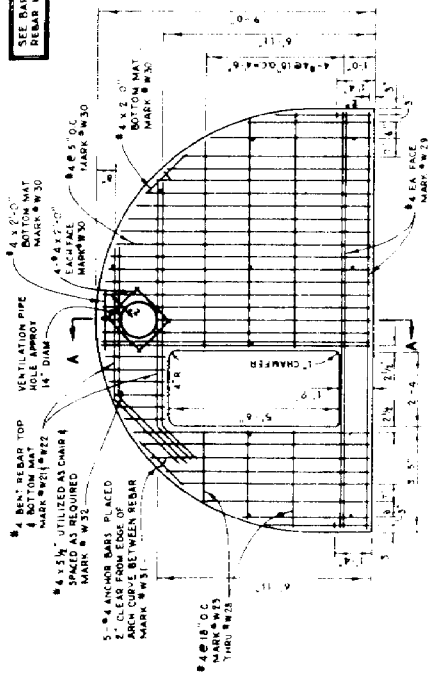


TIE CABLE DETAIL

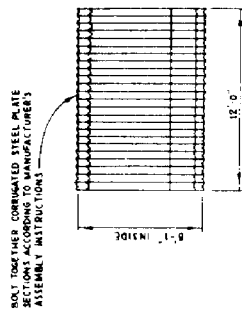


NOTE: 1. WALL MARK W-35 SHOULD BE LOCATED TO FIT TYPE OF ENTRANCE USED.

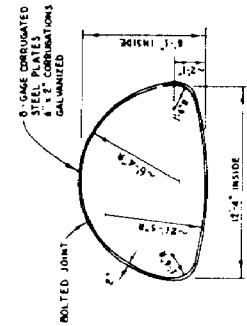
SEE BAR SCHEDULE FOR REBAR MARK NUMBERS



END WALL PLAN

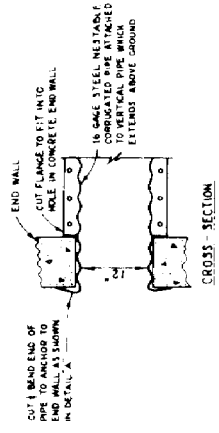


SIDE VIEW



END VIEW

MULTI-PLATE PIPE ARCH SECTION
NOT TO SCALE



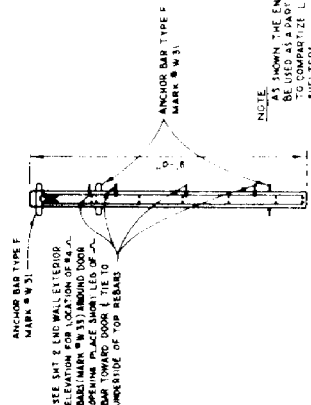
CROSS-SECTION



DETAIL A

VENTILATION PIPE DETAILS
NOT TO SCALE

NOTE: 1. VENTILATION NETWORK SHOOT SECTION OF PIPE CAN BE PLACED AT TIME OF CASTING CONCRETE END WALL TO ELIMINATE ANCHOR.



NOTE: AS SHOWN THE ENDWALL MAY BE USED AS A DRAINAGE WALL FOR CONCRETE PIPE LARGER SHELTERS.

SECTION A-A

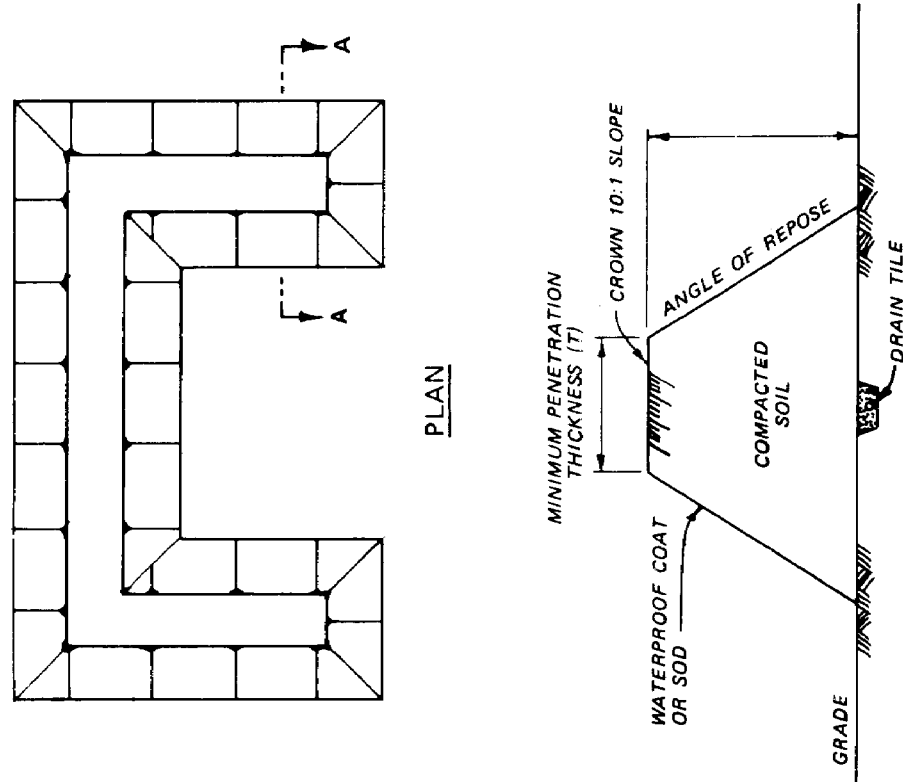
END WALL DETAILS

BAR SCHEDULE					
MARK	QUANTITY	SIZE	LENGTH	TYPE	REMARKS
W1	2	8	3'-6"	D	14
W2	2	8	4'-4"	D	18
W3	2	8	5'-5"	D	22
W4	2	8	6'-5"	D	25
W5	2	8	6'-8"	D	27
W6	2	8	7'-8"	D	29
W7	2	8	7'-8"	D	30
W8	2	8	7'-9"	D	31
W9	1	8	8'-0"	D	10
W10	1	8	8'-2"	D	17
W11	1	8	8'-4"	D	17
W12	1	8	8'-6"	D	18
W13	1	8	8'-8"	D	18
W14	1	8	8'-9"	D	18
W15	6	8	8'-10"	D	98
W16	2	8	8'-0"	D	0
W17	1	8	1'-10"	D	4
W18	1	8	1'-8"	D	4
W19	1	8	1'-6"	D	3
W20	1	8	1'-4"	D	3
W21	4	8	9'-0"	D	32
W22	4	8	9'-0"	E	38
W23	2	8	8'-4"	A	5
W24	2	8	3'-1"	A	7
W25	2	8	5'-4"	A	7
W26	2	8	7'-0"	A	14
W27	2	8	7'-7"	A	16
W28	2	8	7'-10"	A	16
W29	6	8	13'-10"	A	63
W30	11	8	8'-0"	A	23
W31	10	8	8'-0"	A	30
W32	1	8	3'-0"	A	7
W33	6	8	2'-4"	C	19

NOTE: 1. REBARS MARKED W1-W20 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR. 2. REBARS MARKED W23-W24 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR. 3. REBARS MARKED W25-W26 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR. 4. REBARS MARKED W27-W28 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR. 5. REBARS MARKED W29-W30 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR. 6. REBARS MARKED W31-W32 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR. 7. REBAR MARKED W33 CAN BE REPLACED WITH 3'-10" STRAIGHT REBAR.

BILL OF MATERIALS FOR 12' x 12' SHELTER (FORMS NOT INCLUDED)		
MULTI-PLATE PIPE ARCH SECTION	COMMERCIALLY AVAILABLE	
CONCRETE	4 CY	
CONCRETE REINFORCING STEEL	79.22 BARS	
CABLE ANCHOR (SEE CABLE DETAIL)	5 EA	
REINFORCING STEEL TIE WIRE		
WATERPROOFING MEMBRANE		

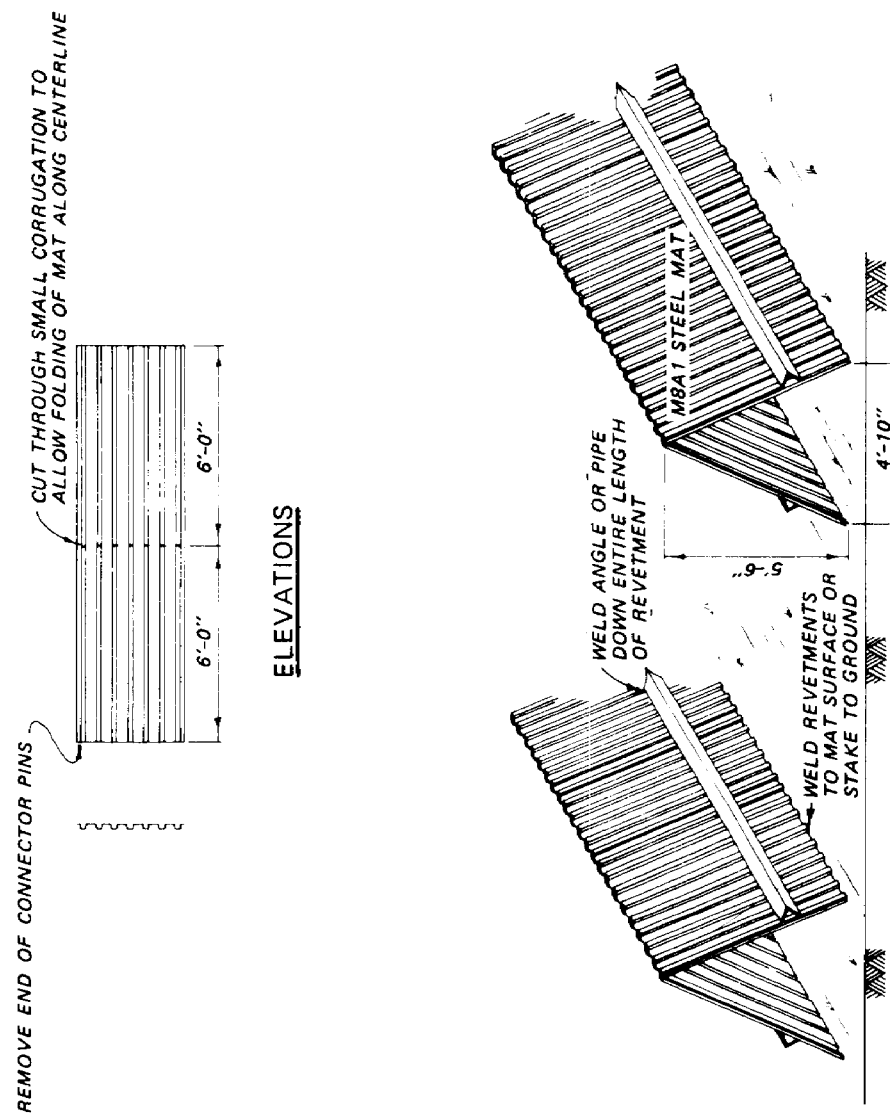
EARTH WALLS



SECTION A-A

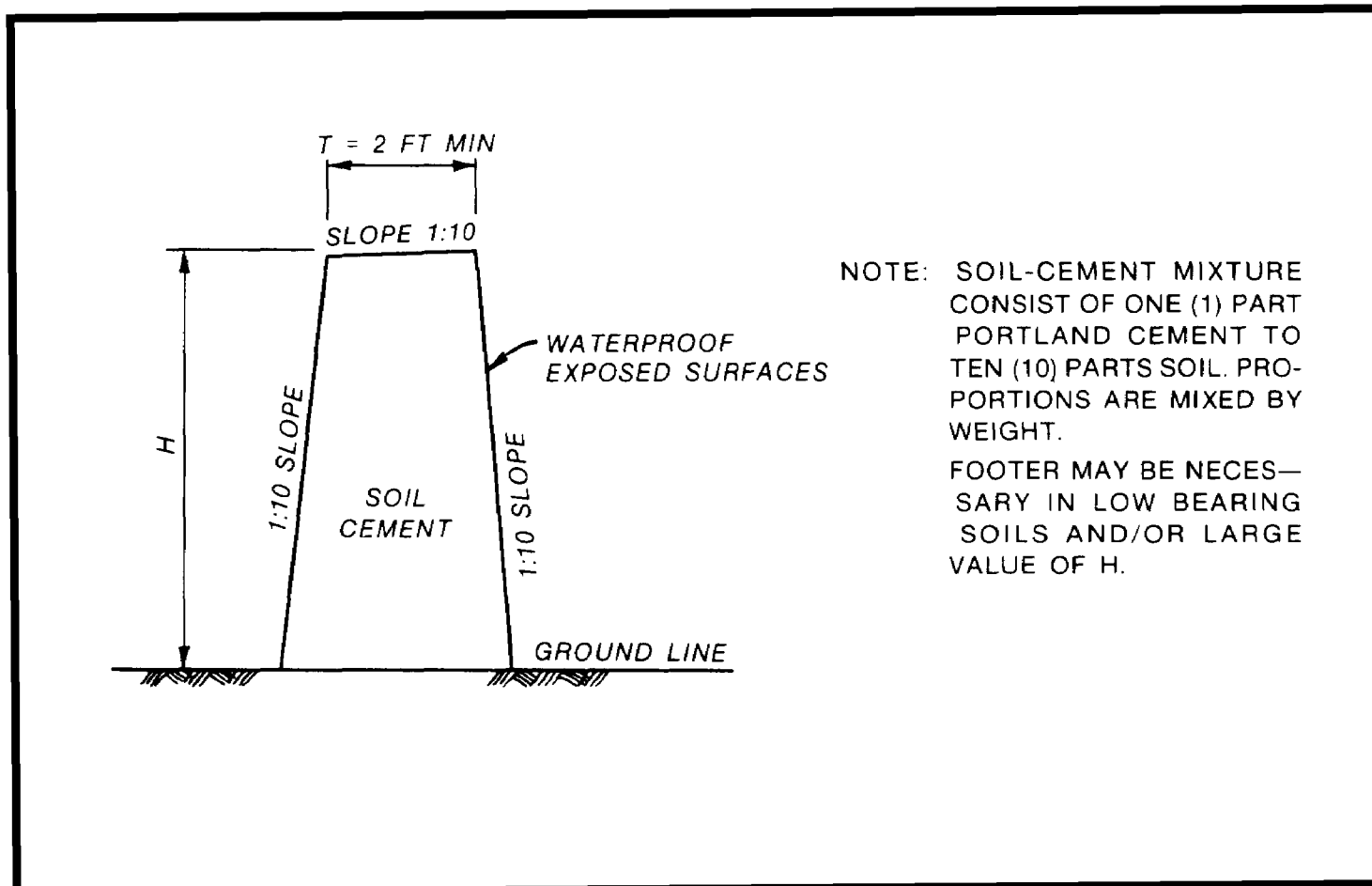
NOTE: WATERPROOFING MAY BE ASPHALT CUTBACK OR CEMENT SLURRY. TRAFFIC ON THE REVETMENT MUST BE PROHIBITED IN ORDER TO PRESERVE THE WATERPROOF COATING.

STEEL LANDING MAT WALL

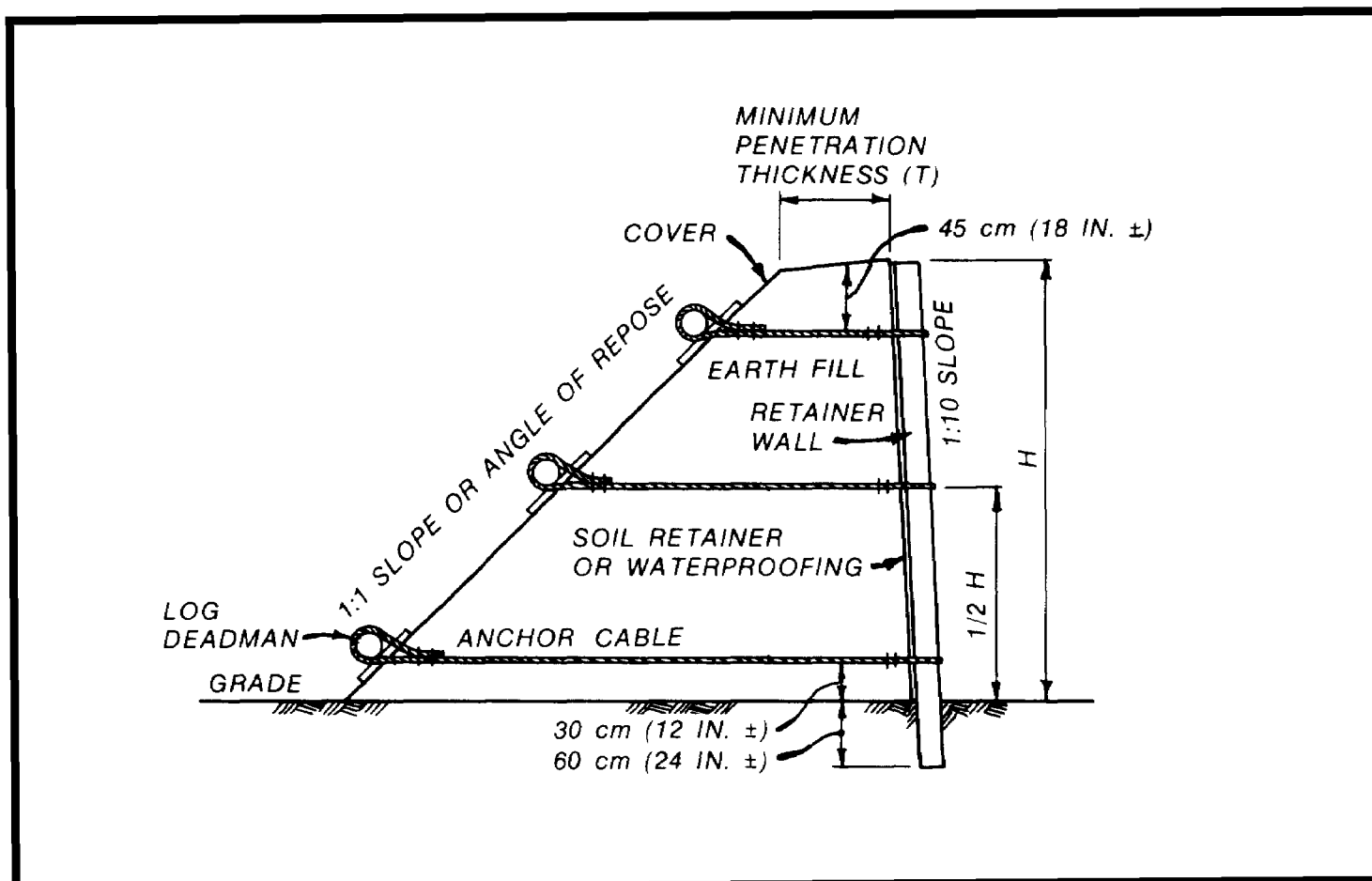


PICTORIAL VIEW

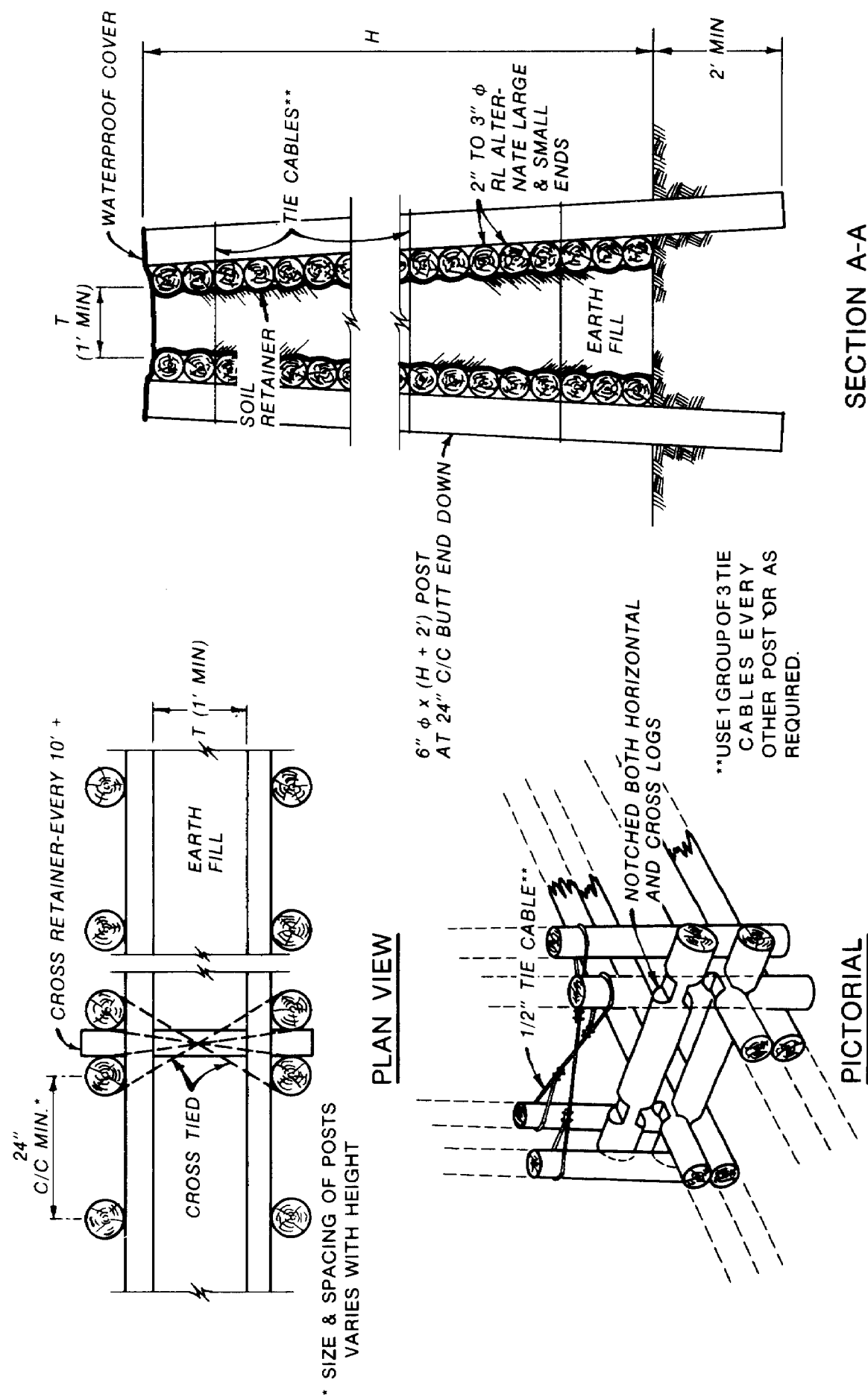
SOIL-CEMENT WALL



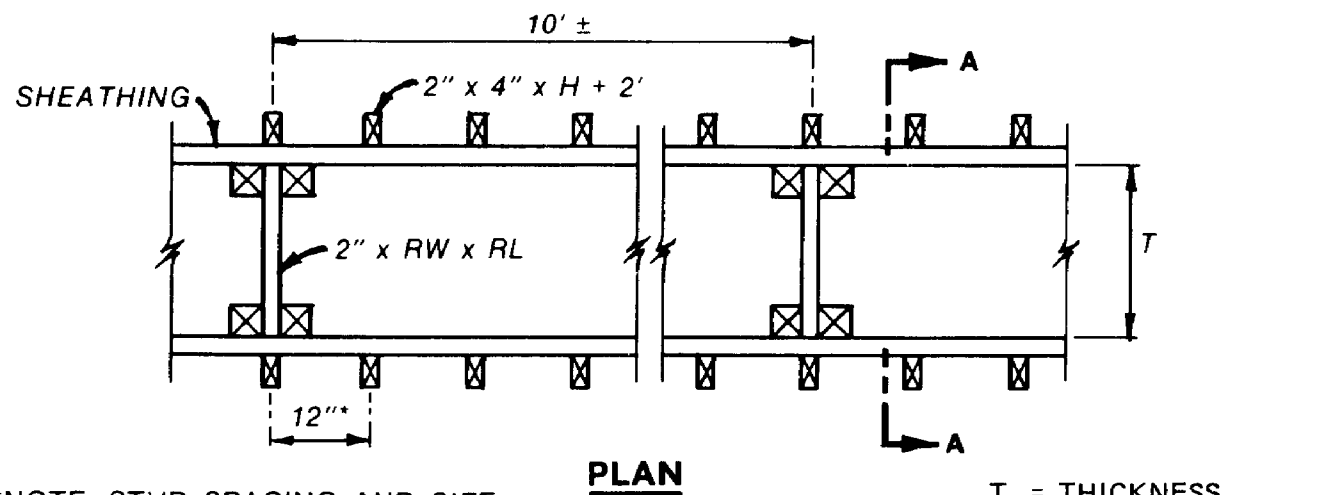
EARTH WALL WITH REVETMENT



SOIL BIN WALL WITH LOG RETVEMENT

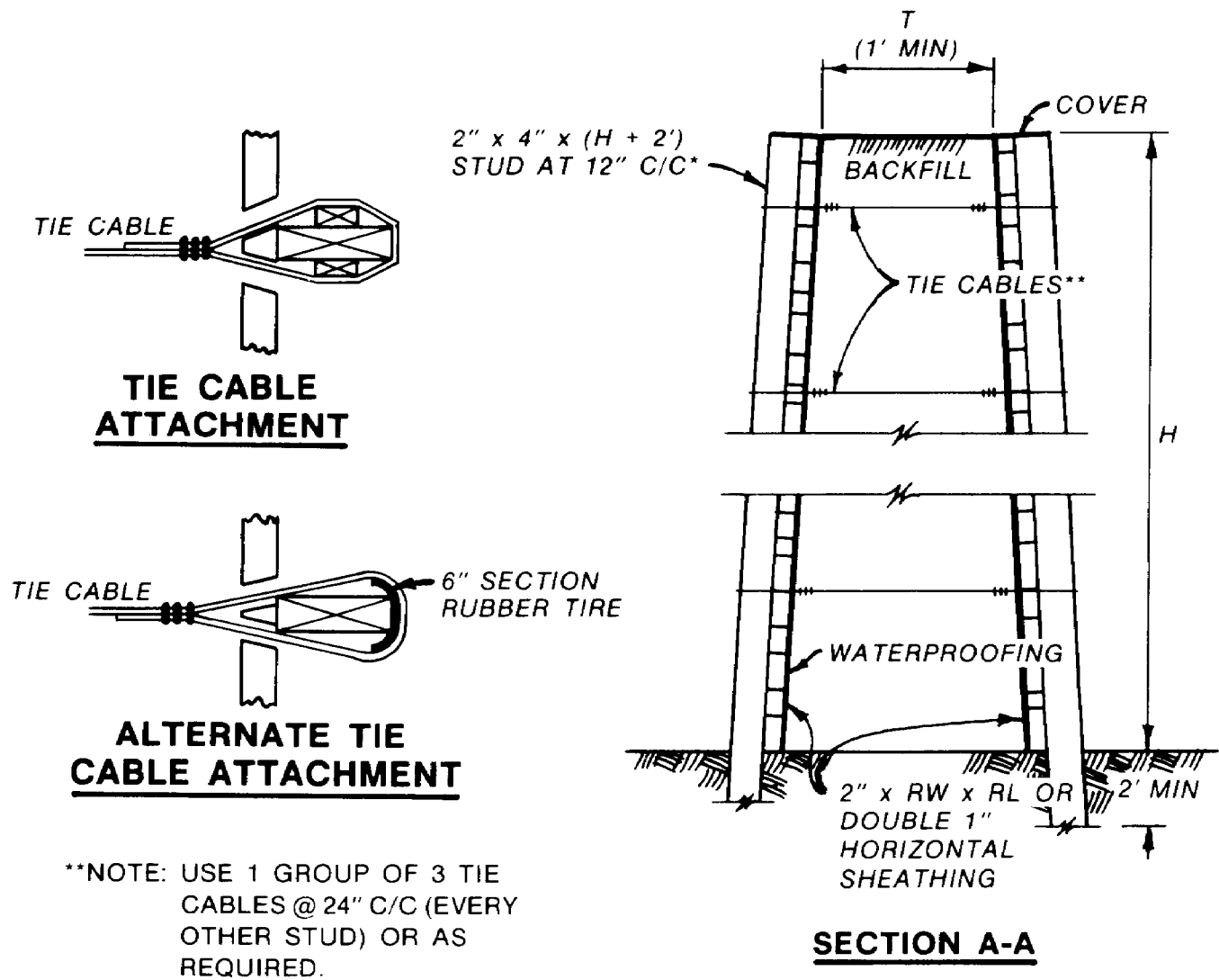


SOIL BIN WALL WITH TIMBER REVETMENT



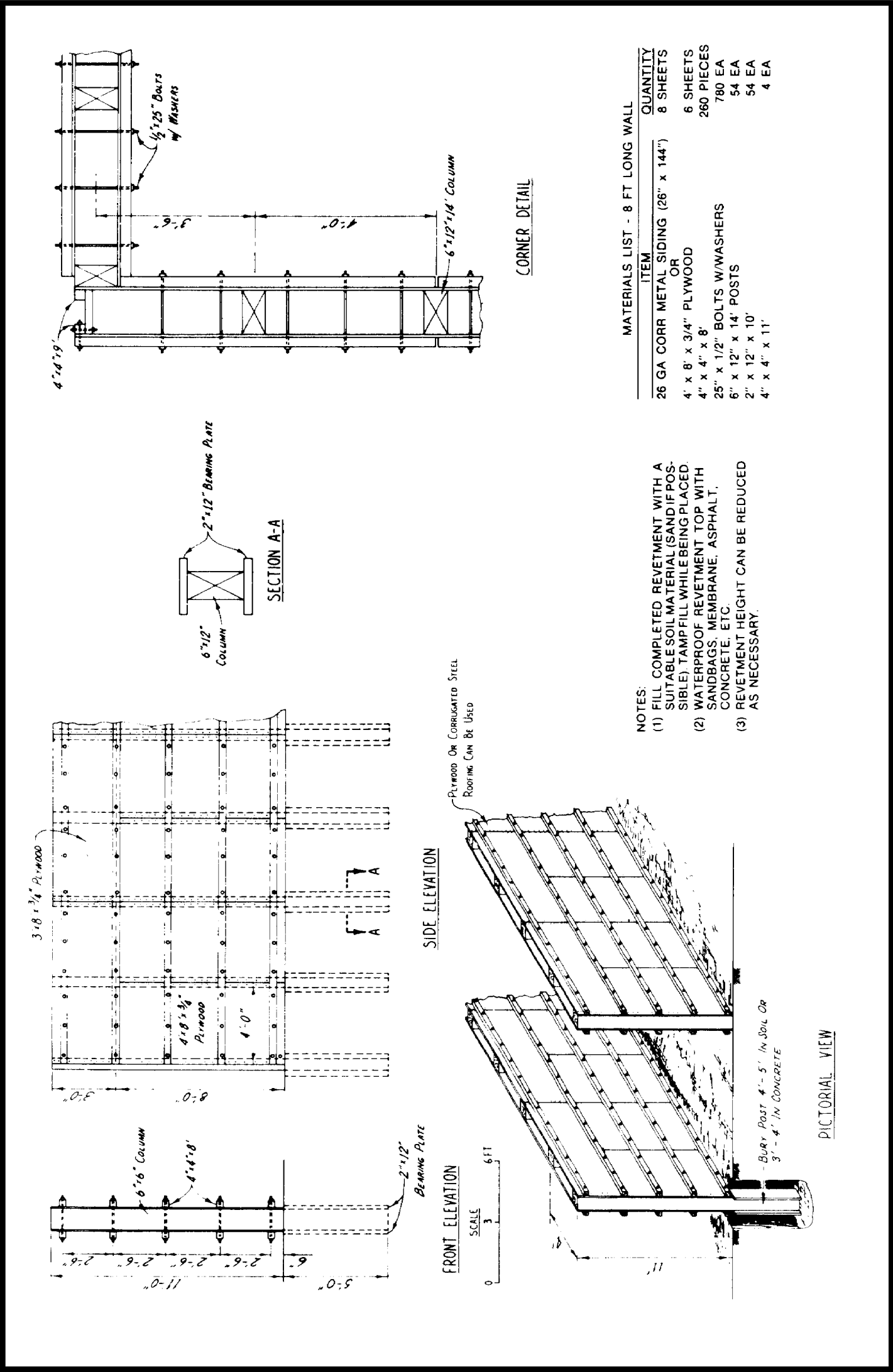
*NOTE: STUD SPACING AND SIZE VARY WITH HEIGHT AND MOISTURE CONTENT OF SOIL.

T = THICKNESS
H = HEIGHT
RW = RANDOM WIDTH
RL = RANDOM LENGTH

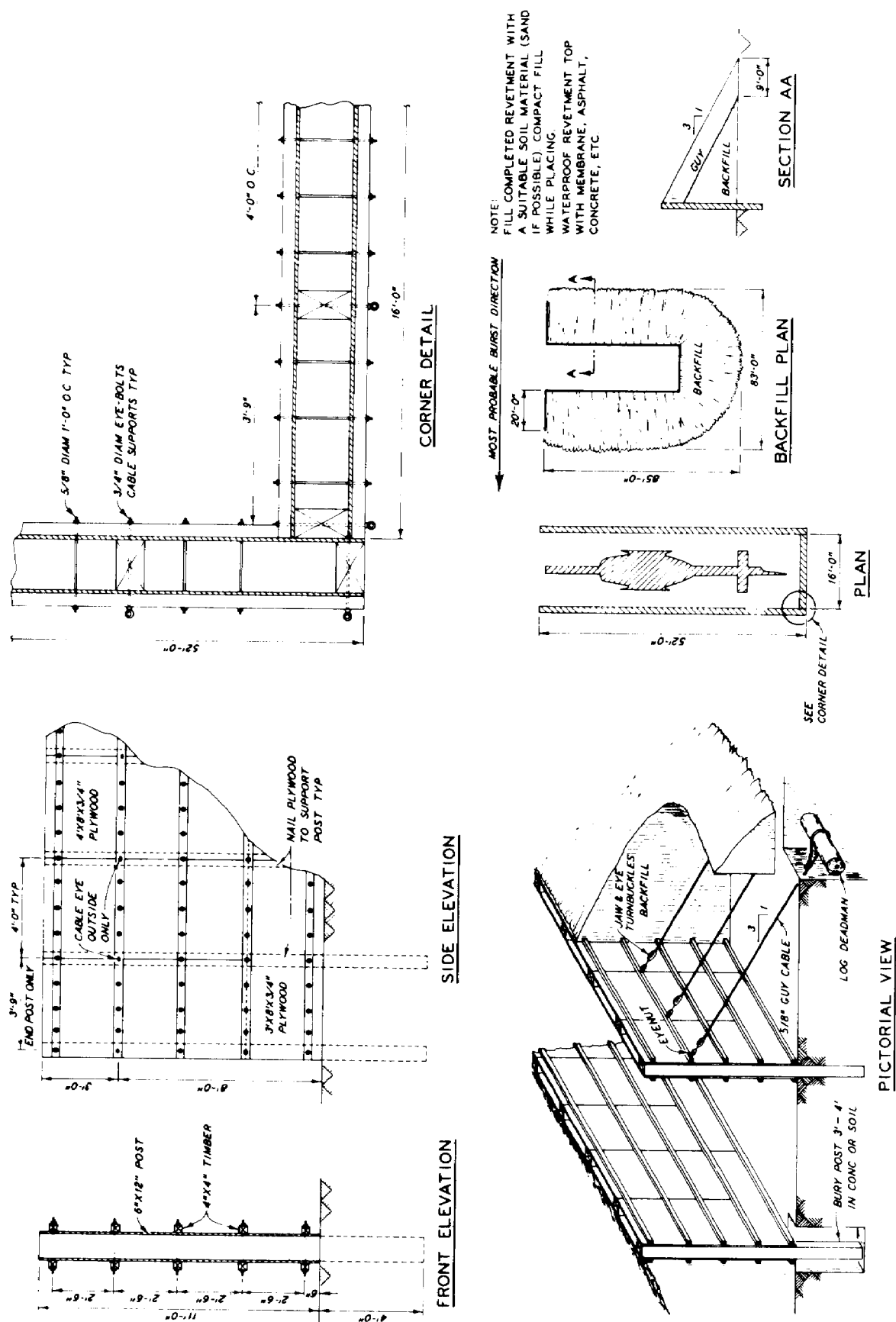


**NOTE: USE 1 GROUP OF 3 TIE CABLES @ $24''$ C/C (EVERY OTHER STUD) OR AS REQUIRED.

SOIL BIN WALL WITH PLYWOOD REVETMENT

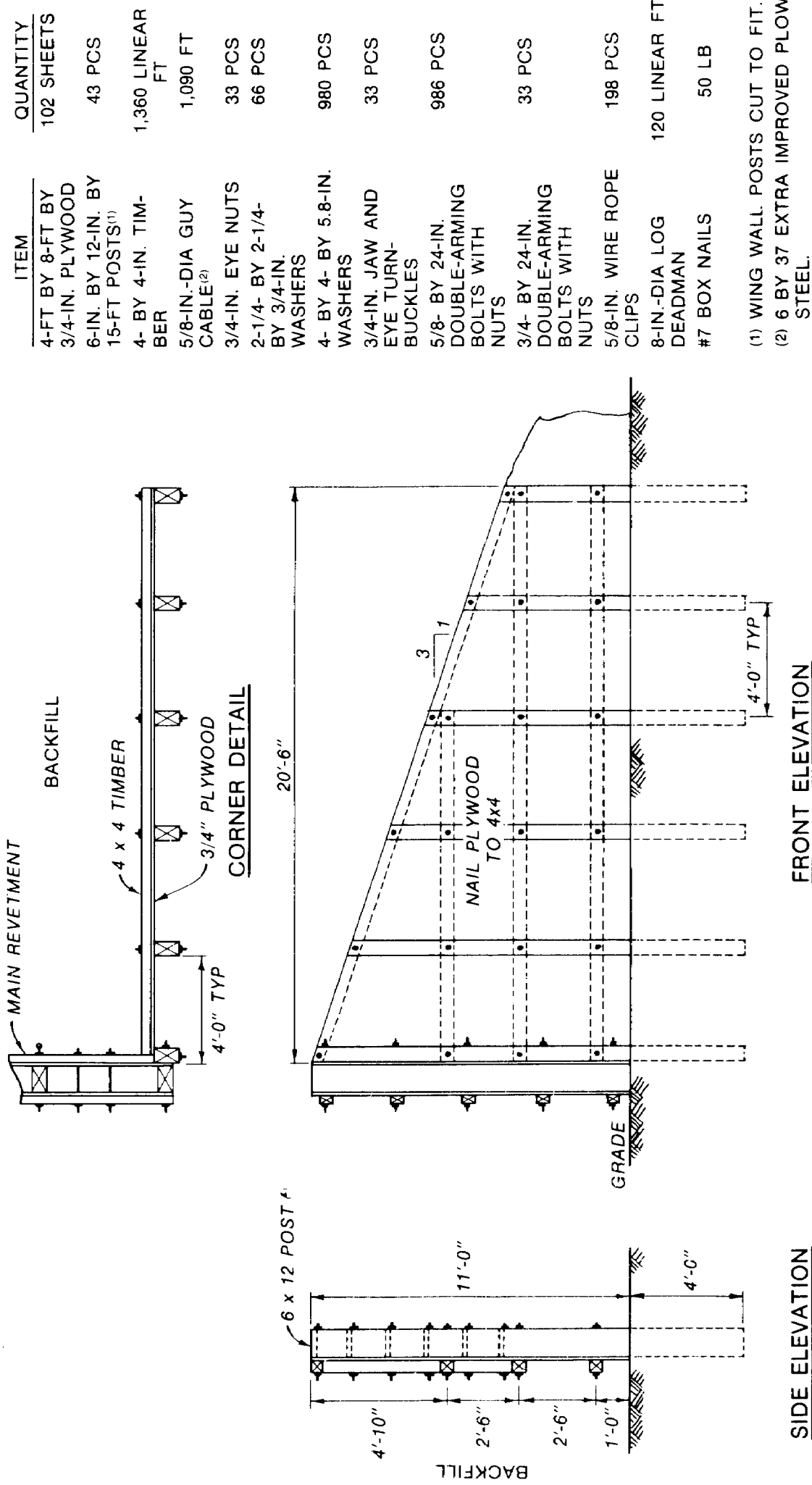


HARDENED SOIL BIN WALL WITH PLYWOOD REVETMENT (sheet 1 of 2)

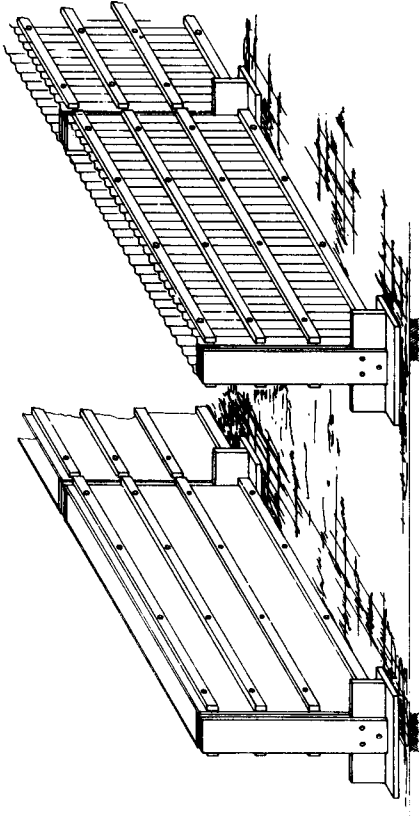


a. MAIN REVETMENT DETAIL

HARDENED SOIL BIN WALL WITH PLYWOOD REVETMENT (sheet 2 of 2)



PLYWOOD (OR CORRUGATED METAL) PORTABLE WALL

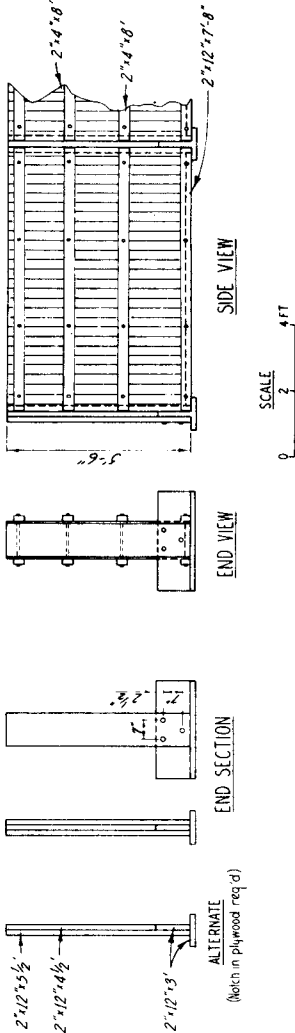


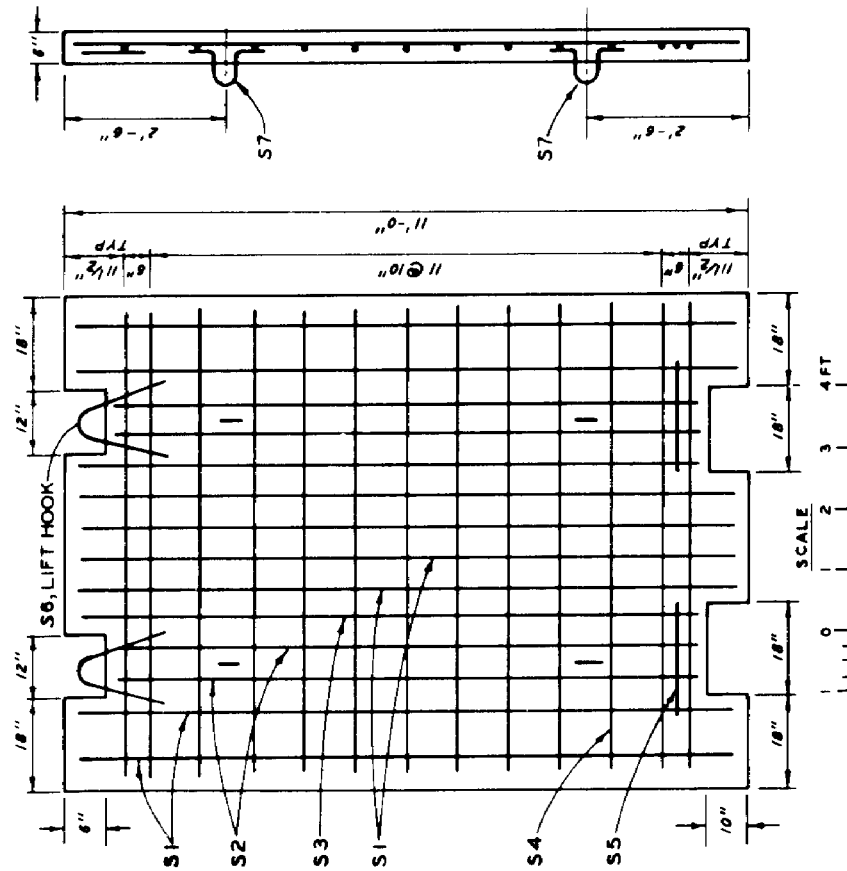
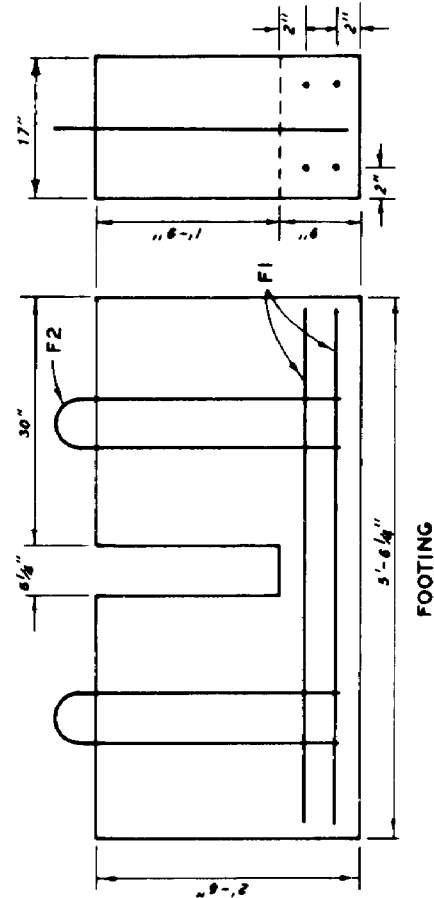
PICTORIAL VIEW

MATERIALS REQUIRED - 8 FT LONG PLYWOOD		
ITEM		NO. REQ'D
4x8 PLYWOOD		3
2x4x8" RUNNERS		6
2x12x7'-8" BOTTOMS		1
2x12x5.5'		4
2x12x4.5'		2
2x12x3'		4
5/8" BOLTS W/WASHERS 8" LG		6
50d NAILS		25
3/8" ϕ BOLTS 19" LG W/WASHERS		12
8d NAILS		75

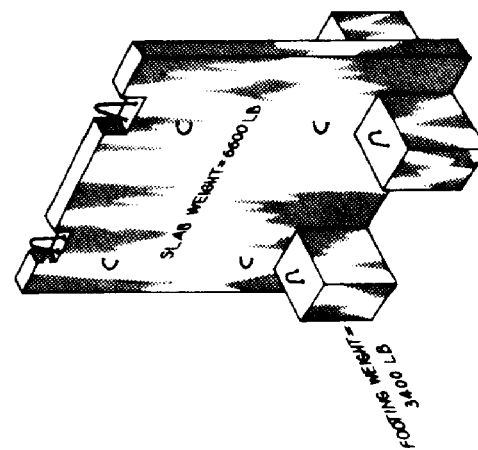
MATERIALS REQUIRED - 8 FT LONG CORRUGATED METAL		
ITEM		NO. REQ'D
26 GA CORR. METAL SIDING 26" x 144"		4
2x4x8" RUNNERS		8
2x12x7'-8" BOTTOMS		1
2x12x5.5'		4
2x12x4.5'		2
2x12x3'		4
5/8" BOLTS W/WASHERS		6
50d NAILS		25
3/8" ϕ BOLTS 19" LG W/WASHERS		16
8d NAILS		75

NOTE: FILL COMPLETED REVETMENT WITH A SUITABLE SOIL MATERIAL (SAND IF POSSIBLE). TAMP FILL WHILE BEING PLACED. WATER-PROOF REVETMENT TOP WITH SANDBAGS, MEMBRANE, ASPHALT, CONCRETE, ETC.



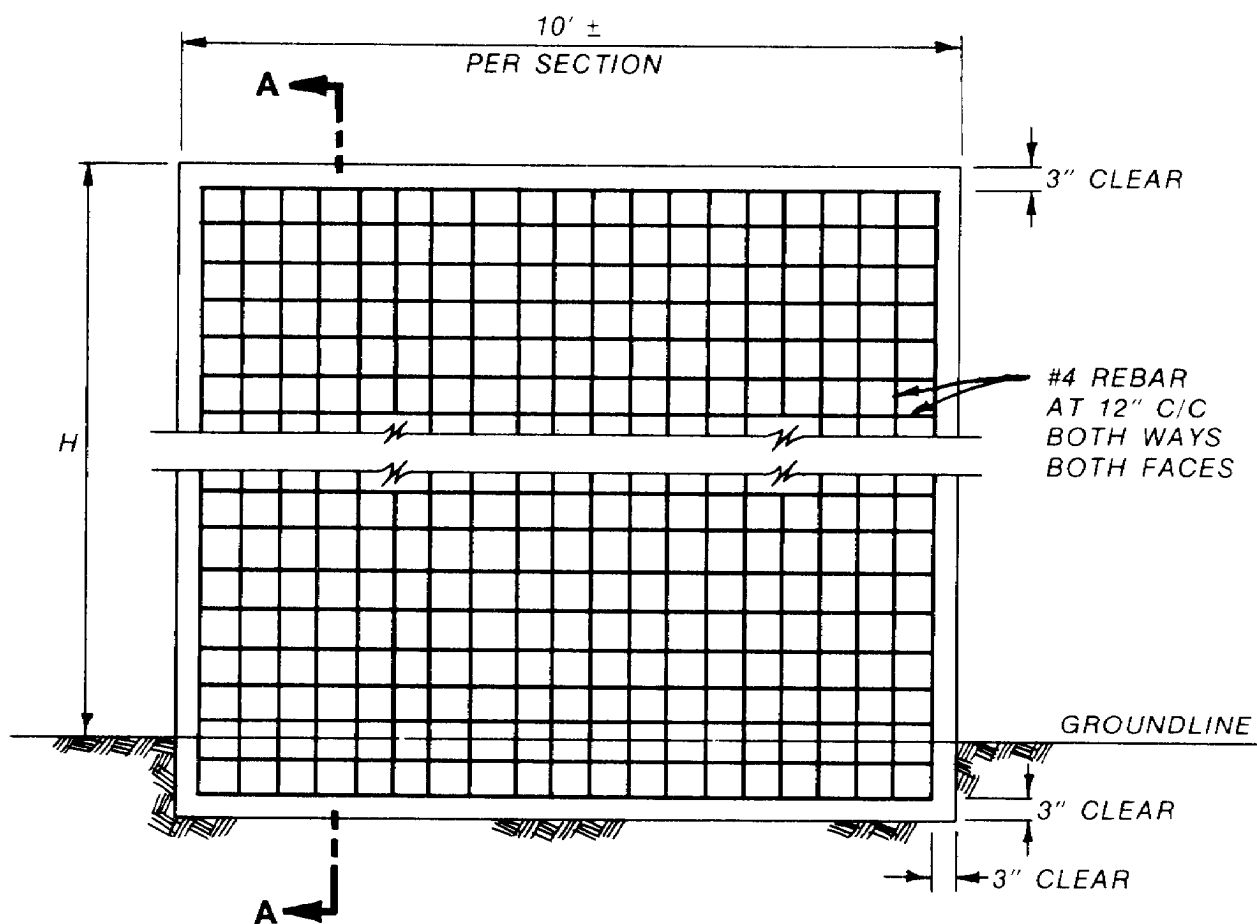


REBAR SCHEDULE				
MARK	DESCRIPTION	QTY	LENGTH	TOTAL LENGTH
S1		8	10'-9"	86'-0"
S2		4	9'-5"	37'-8"
S3		2	9'-11"	18'-10"
S4		13	7'-9"	100'-9"
S5		2	2'-4"	4'-8"
S6		2	4'-8"	9'-0"
S7		4	3'-10"	15'-4"
F1		8	5'-3"	42'-0"
F2		4	8'-8"	

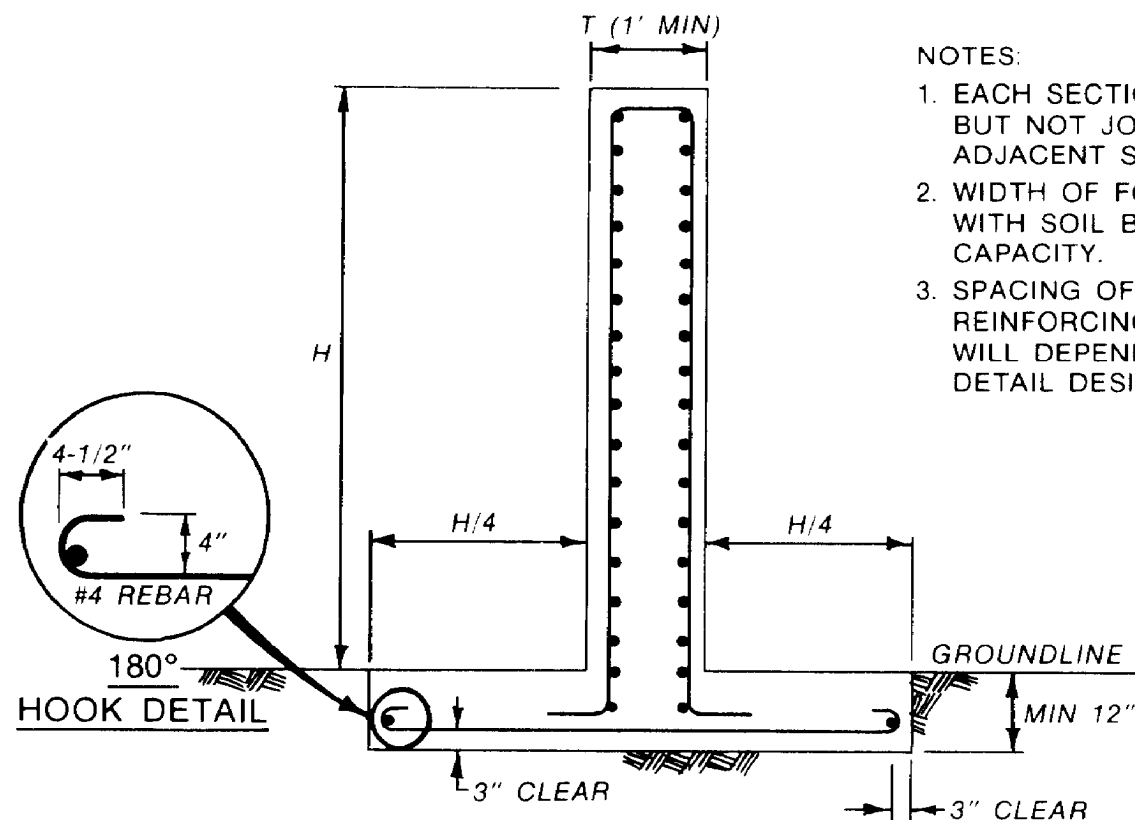


- NOTE
- (1) CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF $f_c = 2500$ PSI.
 - (2) ALL REBARS SHOWN ARE #5.
 - (3) DESIGN STRESS FOR REBAR STEEL IS 20,000 PSI.
 - (4) MINIMUM COVER OVER REINFORCING STEEL IS 1-1/2" UNLESS OTHERWISE NOTED.
 - (5) SLAB HEIGHT CAN BE REDUCED AS NECESSARY.

CAST-IN-PLACE CONCRETE WALL



ELEVATION



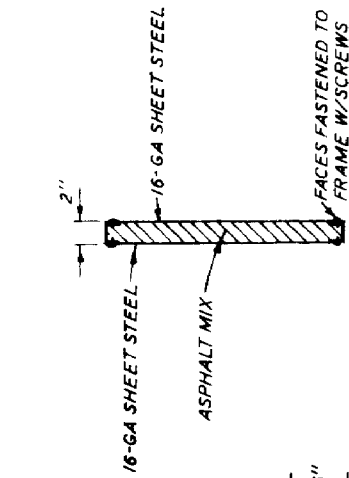
NOTES:

1. EACH SECTION BUTTED BUT NOT JOINTED TO ADJACENT SECTIONS.
2. WIDTH OF FOOTER VARIES WITH SOIL BEARING CAPACITY.
3. SPACING OF FOOTING REINFORCING BARS WILL DEPEND ON DETAIL DESIGN.

SECTION A-A

PORTABLE ASPHALT ARMOR PANELS

BILL OF MATERIALS	
DESCRIPTION	QTY
2-IN. THICK PANEL	
16 GAGE SM	47 FT ²
ASPHALT MIX	272 FT ³
4-IN. THICK PANEL	
4-IN. STD CHANNEL	22 LIN. FT.
16 GAGE SM	32 FT ²
ASPHALT MIX	544 FT ³

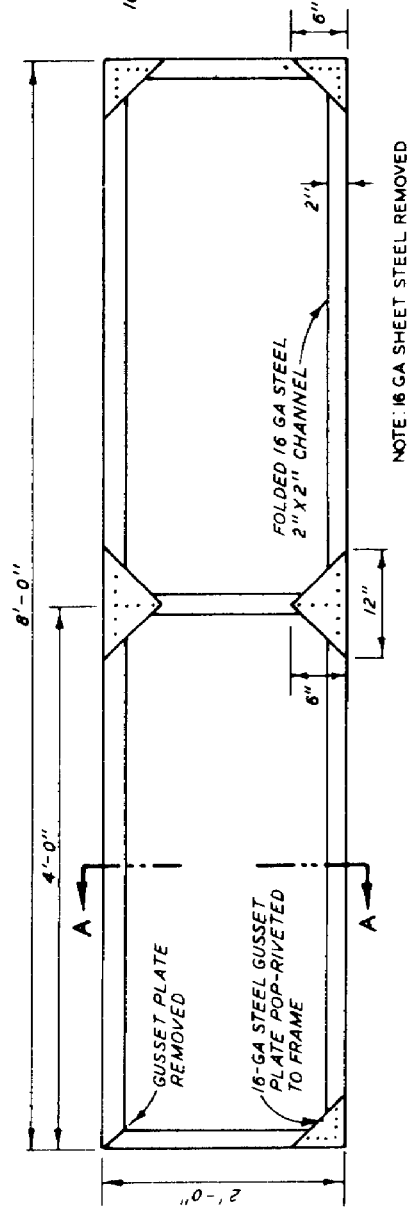


SECTION A-A

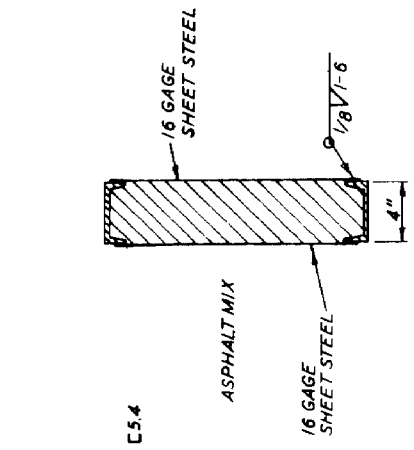
NOTE: SPREAD ASPHALT MIX IN 1-INCH LIFTS AND TAMP

COMPOSITION OF ASPHALT MIX IS AS FOLLOWS (BY WEIGHT):

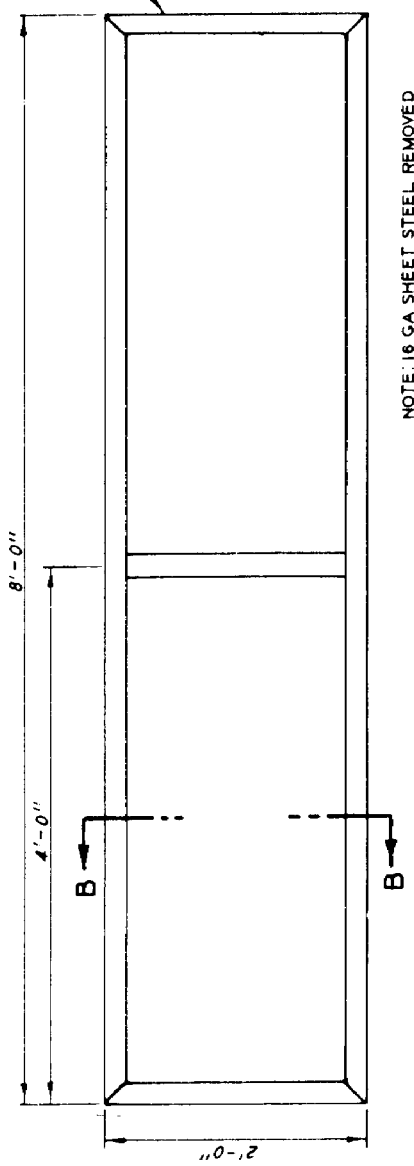
- a. COARSE AGGREGATE - 66 %
(SIEVE SIZES $\frac{3}{4}$ TO $\frac{1}{2}$ INCH - 22 %, $\frac{1}{2}$ TO $\frac{3}{8}$ INCH - 22 %, $\frac{3}{8}$ INCH TO NO. 4 - 22 %)
- b. MINERAL FILLER (IE LIMESTONE DUST) - 34 %
- c. ASPHALT BINDER - 75 % OF TOTAL AGGREGATE WEIGHT



2-INCH THICK PANEL

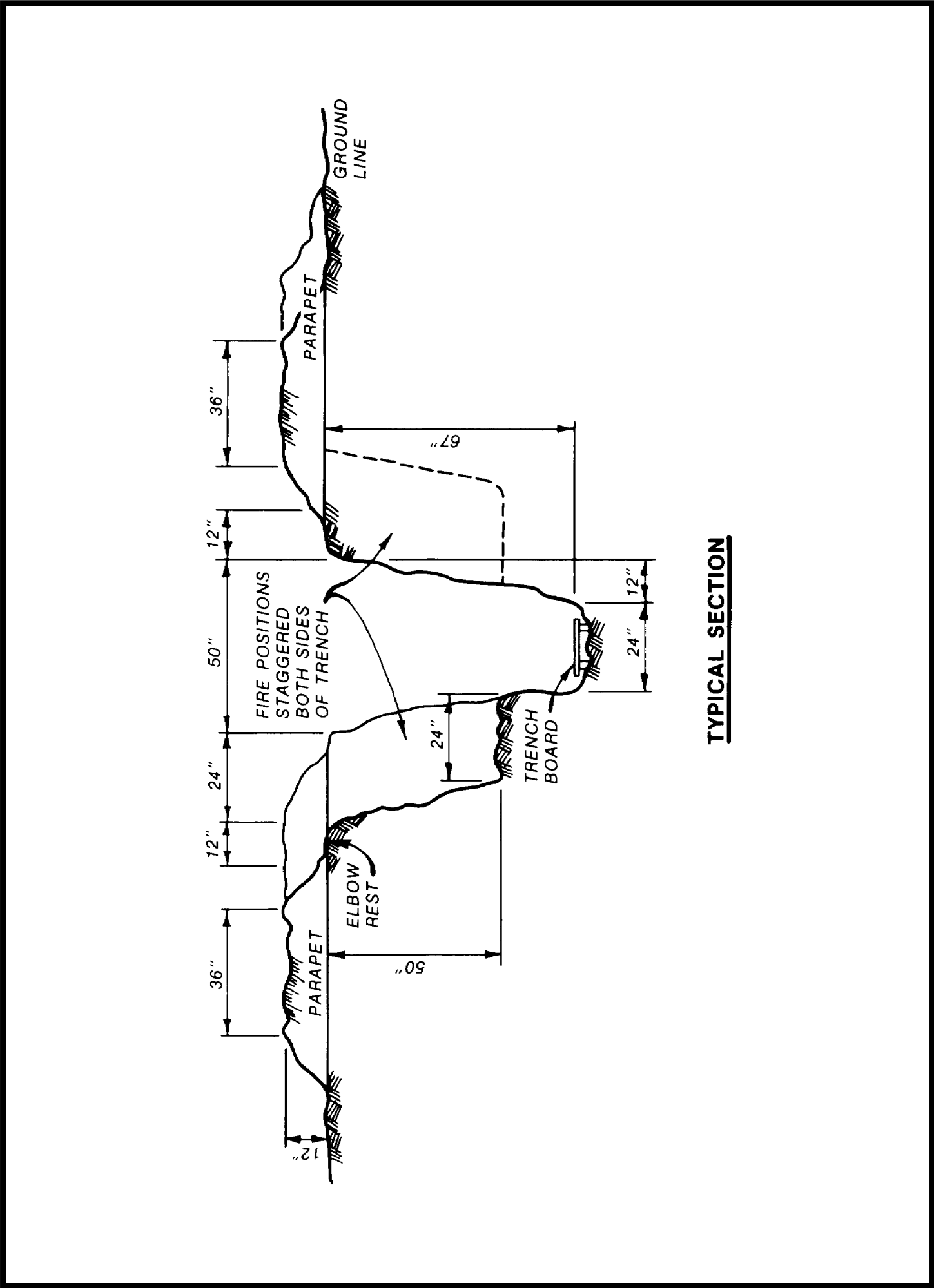


SECTION B-B



4-INCH THICK PANEL

STANDARD FIGHTING TRENCH



VEHICLE FIGHTING POSITIONS (DELIBERATE)

Vehicle Type	Position Dimension, ft ²		Turret Depth (D) ⁵	Weapon System Deflection Evaluation	Volume of Earth Moved (cy) Turret ⁶	Equipment Hours ⁴ D7 Dozer/M9 ACE	
	Length (A)	Width (B)				Hull	Total ⁷
M113 series carrier ³	22	14	6	—	69	0.6	1.0
M901 improved TOW vehicle	22	14	7	+30°	80	0.6	1.1
M2 and M3 fighting vehicle	26	16	7	-10° gun -10° TOW	108	0.8	1.7
M1 main battle tank	32	18	5½	+30°	218		2.5
M60 series main battle tank	30	18	6	+20°	118	0.9	2.0
M48 series battle tank	30	18	6	+20°	120	0.9	2.1
					278	0.9	3.0

Notes:

1. Hasty positions for tanks, IFVs, and ITVs not recommended.
2. Position dimensions provide an approximate 3-foot clearance around vehicle for movement and maintenance and do not include access ramp(s).
3. Includes M132 flamethrower and M103 Vulcan.
4. Production rate of 100 bank cubic yards per .75 hour. Divide construction time by 0.85 for rocky or hard soil, night conditions, or closed hatch operations (M9). Ripper needed if ground is frozen. Use of natural terrain features will reduce construction time.
5. All depths are approximate and will need adjustment for surrounding terrain and fields of fire.
6. Turret volume (c) plus approach volume (b). Path length (E) is approximately ½(A).
7. Hull volume (a) plus approach volume (b) plus turret volume (c).

